

# Drive<sup>IT</sup> Permanent Magnet Motors



**Industrial<sup>IT</sup>**  
—enabled™

**ABB**

# Making you more competitive

ABB has been manufacturing motors for over 100 years, providing products designed to be reliable, efficient and cost effective. The new permanent magnet motor series extends the effective nominal speed range of the rugged industrial work-horses, the AC motor, down to 100 - 850 r/min. These motors simplify drive systems by effectively eliminating the need for speed reduction devices.



## Industrial<sup>IT</sup>

As a key element of its business strategy, ABB has committed to a broad program of product development and positioning under the Industrial<sup>IT</sup> umbrella. This initiative is geared towards increasing standardization of ABB products as the 'building blocks' of larger solutions, while incorporating functionality that will allow multiple products to interact seamlessly as components of real-time automation and information systems.

Motors and generators represent one of the fundamental building blocks in the Industrial<sup>IT</sup> architecture.

*ABB ([www.abb.com](http://www.abb.com)) is a leader in power and automation technologies that enable utility and industry customers to improve performance while lowering environmental impacts. The ABB Group of companies operates in around 100 countries and employs around 113,000 people.*

# Drive<sup>IT</sup> Permanent Magnet Motors

Sizes 280 to 560

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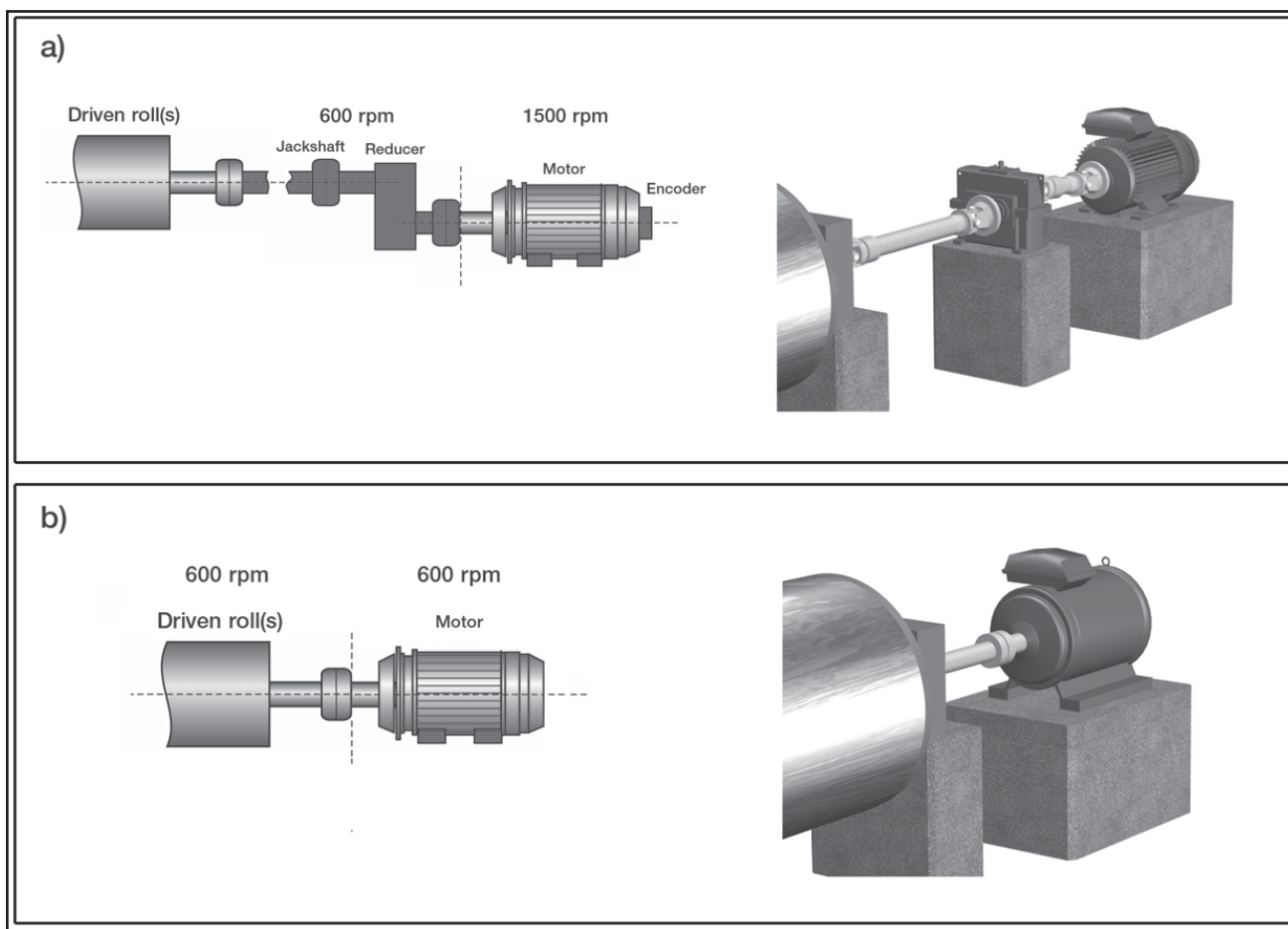
# Permanent magnet motors for variable speed applications

Drive<sup>IT</sup> low voltage permanent magnet motors are synchronous motors, designed to drive low speed applications directly, without a gearbox. Ideal applications are paper machines, low speed pumps, extruders etc. The motors are designed exclusively for frequency converter supply. ABB's frequency converters from the ACS 600, ACS 800 and ACS 6000 series are available with permanent magnet motor software.

ABB's permanent magnet motors are based on the well-known and reliable M3BP and HXR motor design. The greatest difference is the modern rotor construction, where the squirrel cage or magnetisation windings have been replaced by highly efficient permanent magnets. This means that the major benefits of squirrel cage and synchronous motors are combined to one product, called M3BJ, M3LJ or AMZ.

The ABB Direct Drive system offers several valuable benefits:

- Higher overall efficiency of a drive system
- Excellent controllability and adjustability, even without a pulse encoder. For instance, no pulse encoder is needed with paper machine drives
- Fewer components means: less maintenance and less down-time
- Easier and faster installation
- Space savings



Conventional drive system (a) compared to Direct Drive (b).

# Application characteristics

Technically, the permanent magnet motor could be used in any application up to about 850 r/min. However, not all applications may be economic.

## Permanent magnet motor solution can typically replace:

- A traditional AC motor and gearbox with frequency converter.
- A traditional low speed AC motor, typically 10 to 16-pole or slower with frequency converter.
- A DC motor with DC drive and gearbox.

## The permanent magnet motor is ideal in the following cases:

- Where the application is speed controlled, for instance with a frequency converter.
- Where the nominal load speed, for example the gearbox output speed, is 100 to 850 r/min or ideally 300 to 600 r/min.
- Where the nominal load torque is between 1000 and 50 000 Nm \*).
- Where the required short-time overloadability is limited to 120 - 150 %.
- The greatest savings are achieved if the current speed reduction system is expensive or otherwise problematic.

- Constant torque or quadratic torque applications are the most ideal. Constant power speed range should ideally be limited to 20 % over nominal speed.

$$*) T [Nm] = \frac{P [kW] \times 9550}{\text{load r/min}}$$

In the case of motor and gearbox solution:

- P is the power of the existing motor power
- 'load r/min' is the speed in r/min of the output shaft of the gear box

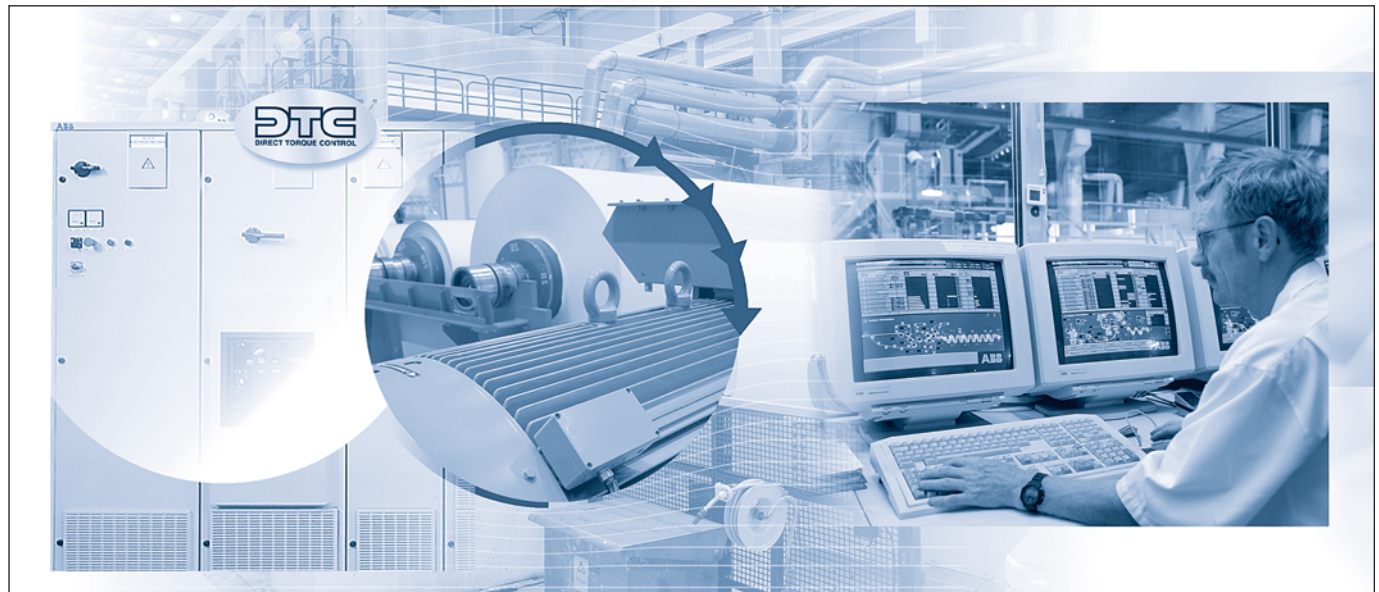
## Example:

Motor 160 kW, max. motor speed 1500 r/min. Gearbox with  $i = 5$

Gearbox output speed (= load speed) =  $1500 / 5 = 300$  r/min

$$T = \frac{160 \times 9550}{300} = 5093 \text{ Nm}$$

See 'Motor characteristics section 4. Motor selection example'.



# Motor characteristics

The rotor magnetization is achieved by the permanent magnets installed inside the rotor. This means the amount of magnetizing current drawn from the supply network is minimal. For this reason, the power factor of these motors is considerably higher compared to squirrel cage motors with the same nominal speeds. In practice, this means smaller frequency converters and supply units.

## 1. Loadability

Motors with separate cooling (IC 416) or liquid cooling can deliver full torque continuously at any speed between zero and nominal speed ( $n_n$ ). The continuous output torque of self-cooled (IC 411) motors must be derated according to the applicable speed range. Note that the nominal torque of a self-cooled (IC 411) motor is not equal to the nominal torque of the same motor with separate cooling (IC 416). Derating factors can be found in Figure 1. Above nominal speed all motors can deliver constant power (CP) up to 1.2 times  $n_n$ .

This catalogue includes all available M3BJ and M3LJ type motors. A greater speed and output range is available in the AMZ series of motors. The types listed in this catalogue represent the torque range for each frame size.

## 2. Speed Range

Generally the speed range of these motors is from zero to 1.2 times the nominal speed. The voltage, which is induced by the permanent magnets to the stator windings, is proportional to the rotational speed. At speeds higher than 1.2 times  $n_n$ , the voltage may be too high for the insulation of the motor and the supply system, as well as for the frequency converter. In some cases the

maximum speed is limited to  $n_n$ . The maximum speed for the motors at different voltage levels is listed for each motor in the technical data section. If higher speed is needed, please contact ABB.

## 3. Overloadability

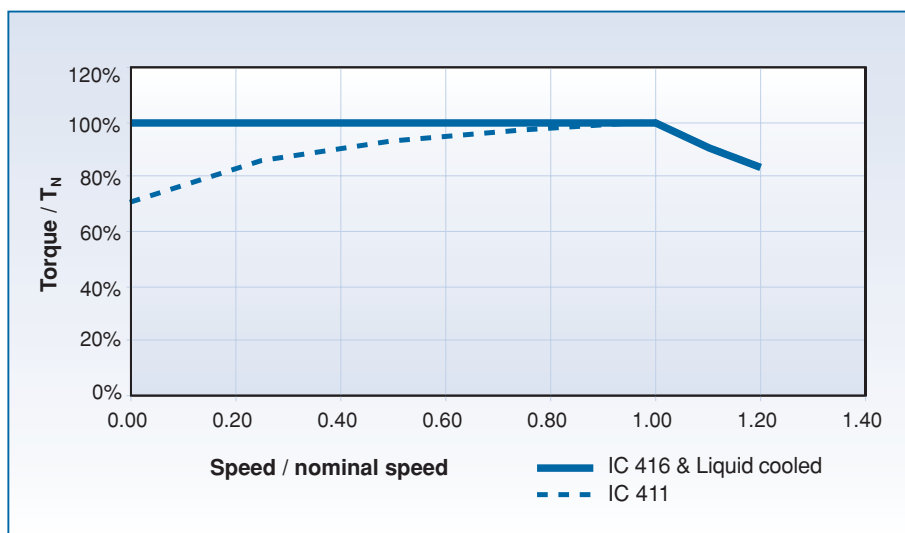
The permanent magnet motors have limited short-time overloadability, especially with the IC 416 and liquid cooled versions. The  $T_{max}/T_N$  values in the technical tables represent the available overloadability with frequency converter supply. Necessary margins are already included. There is no need to add any margins to this value. This value does not represent the pull-out torque value according to IEC standards.

## 4. Motor selection

Motor selection step-by-step:

1. Find the correct section based on network voltage.
2. Select between self cooled, IC 411 and forced ventilated, IC 416 (or liquid) cooled data tables. A motor with forced ventilation, IC 416 is usually the most economical solution.
3. Select the base speed. The most economical solution is achieved by selecting a motor with lowest base speed. Note however the maximum speed given for each motor type.
4. Generally, the motor can be selected based on torque when the base speed of the load is below the motors base speed. If motors base speed is below loads base speed, the motor selection is based on power. In any case make sure that the motor has enough torque throughout the speed range.

Figure 1. Permanent magnet synchronous motor loadability with ACS 600 and ACS 800 Frequency Converter.



### Example

**Network voltage: 500 V**

**Load: Constant torque 8000 Nm, 100-400 r/min, 335 kW at 400 r/min**

**Cooling: IC 416 cooling**

In the 500 V section there are 375 r/min and 433 r/min motor base speeds.

In the case of the 375 r/min motor base speed, the motor's base speed is below the base speed of the load and the motor selection is based on power as the motor is working on the "constant power" range. The M3BJ 400LC / 3GBJ406530-ADG183706 motor can deliver 366 kW between 375 r/min and 450 r/min and 9309 Nm between 0-375 r/min. It meets the application requirements.

In the case of 433 r/min base speed, the motor's base speed is above the load's base speed and the motor selection is based on torque as the motor is working on its constant torque range throughout the load's speed range. The M3BJ 400LC / 3GBJ406530-ADG183708 can deliver 8906 Nm between 0 - 433 r/min. Also this motor meets the application requirements.

However the 375 r/min motor needs less current as it has reached the field weakening point and full inverter output voltage. This minimizes the inverter size and optimizes the drive system economically.

The permanent magnet motors will be included in the DriveSize program during 2004. The software will include all M3BJ, M3LJ and AMZ type motors.

## 5. Insulation protection

The 280 to 400 size motors are equipped with reinforced insulation as standard, thus dU/dt-filter is needed only above 600 V.

The 500 to 560 size motor are made with form wound windings with Micadur® Compact Industry Insulation system (class F). It has a sufficient insulation level for a IGBT converter even without output chokes or dU/dt filters. For more information, please see the brochure 'Micadur® Compact Industry, Insulation System for Rotating Electrical Machines' (code 3BFP 001 980 R0101 REV B 06/2003).

## 6. Bearing currents

Bearing voltages and currents must be avoided in all motors. When using ABB IGBT frequency converters properly dimensioned filters at the converter output must be used according to the instructions in figure 2. (For other alternatives and converter types, please contact ABB)

When ordering, clearly state the alternative to be used. All motors listed in this catalogue have insulated bearings or bearing systems at the non-drive end as standard.

For more information about bearing currents and voltages, please consult ABB document 3GZF500930-8 or contact ABB.

Figure 2. Selection rules for insulation and filtering for permanent magnet motors

| Motor nominal power on frame size |                                             |                                                                      |                                         |
|-----------------------------------|---------------------------------------------|----------------------------------------------------------------------|-----------------------------------------|
|                                   | $P_N < 350 \text{ kW}$ , IEC 280 to 355     | $P_N \geq 350 \text{ kW}$ or IEC 400                                 | IEC 500 and 560                         |
| $U_N \leq 500 \text{ V}$          | Standard motor                              | Standard motor                                                       | Standard motor<br>+ Common mode filters |
| $U_N \leq 600 \text{ V}$          | Standard motor                              | Standard motor<br>+ Common mode filters                              |                                         |
| $U_N \leq 690 \text{ V}$          | Standard motor<br>+ dU/dt –filter (reactor) | Standard motor<br>+ dU/dt –filter (reactor)<br>+ Common mode filters |                                         |

### dU/dt filter

These filters are series reactors, which decrease the rate of change of the phase and main voltages and thus reduce voltages and reduce voltage stress in the windings. dU/dt filters also decrease common mode currents and the risk of bearing currents. They are designed to limit the dU/dt rate of the main voltage at motor terminals to approx. 1 kV/μs.

### Common mode filters

Common mode filters consist of toroidal cores installed around motor cables or onto the busbars inside frequency converter. These filters reduce common mode currents in VSD applications and thus decrease the risk of bearing currents. Common mode filters do not significantly affect the phase or main voltages on motor terminals. For more information and product codes, please contact ABB.

## 7. Cabling, grounding and EMC

The use of a frequency converter causes some further requirements to the cabling and grounding of the drive system. The motor must be cabled by using shielded symmetrical cables and cable glands providing 360° bonding (also called EMC-glands).

For motors frame size IEC 280 and upward, additional potential equalization between the motor frame and the machinery is needed, unless they are installed on a common steel fundament. When a steel fundament is used equalize potential, the high frequency conductivity of this connection should be checked. To fulfill the EMC requirements, special EMC cable(s) must be used in addition to the correct cable gland mounting, with special, additional grounding pieces.

More information about grounding and cabling of a variable speed drive can be found from the manual 'Grounding and cabling of the drive system' (Code: 3AFY 61201998 R0125 REV A).

## 8. Reverse power

Magnetic flux is present in the motor at all times due to the permanent magnets in the rotor. The motor generates voltage if rotated. Motor rotation must be prevented before opening the terminal box. If there is a possibility that the motor may be rotated when the supply system is cut off, it is recommended that there is a proper switch disconnecting the motor from the supply system to ensure safe working.

# ABB's industrial drive for permanent magnet motors

Drive<sup>IT</sup> Low Voltage AC Drives are used to control the speed and torque of a standard induction motor. Now with ACS 800 series single drives and multidrives it is possible to control the ABB permanent magnet synchronous motors (PMSM) as well.

ACS 800 PMSM control application program provides the same excellent Direct Torque Control (DTC) performance and control accuracy developed by ABB making speed encoders and/or rotor position measurement unnecessary.

One of the main benefits of the ACS 800 series is a wide range of drive products with common technologies. This includes e.g. compact design, DTC, common user and process interfaces, flexible and programmable I/Os, software tools for sizing, commissioning and maintenance as well as common spare parts.

Main benefits of the ACS 800 PMSM control are the ability to start a permanent magnet motor encoderless with estimated rotor position and to produce full torque within 200 ms after the start command. Also very accurate torque linearity can be achieved down to 2 % of the nominal speed of the PM motor.

Safety, feasibility and dimensioning considerations:

- Rotating PM motor generates Back-EMF voltage, thus a separate protective device must be used, e.g. a safety switch by the motor.
- Field weakening is very limited. In case of an active load, the intermediate circuit must be protected against over speed/over voltage.
- AC drive needs to be over dimensioned by 10 % of the nominal motor current.

**To select the correct drive please refer to the corresponding ABB industrial drive catalogue and use the DriveSize dimensioning tool.**

- ACS 800 Catalogue for single drive
- ACS 800 Technical catalogue for multidrive

**For more information of the PMSM control application program.**

- Supplement to Firmware Manual – Permanent Magnet Synchronous Machine Drive Application Program
- ACS800 Firmware Manual for System Application Program



# Mechanical design

## Stator frame

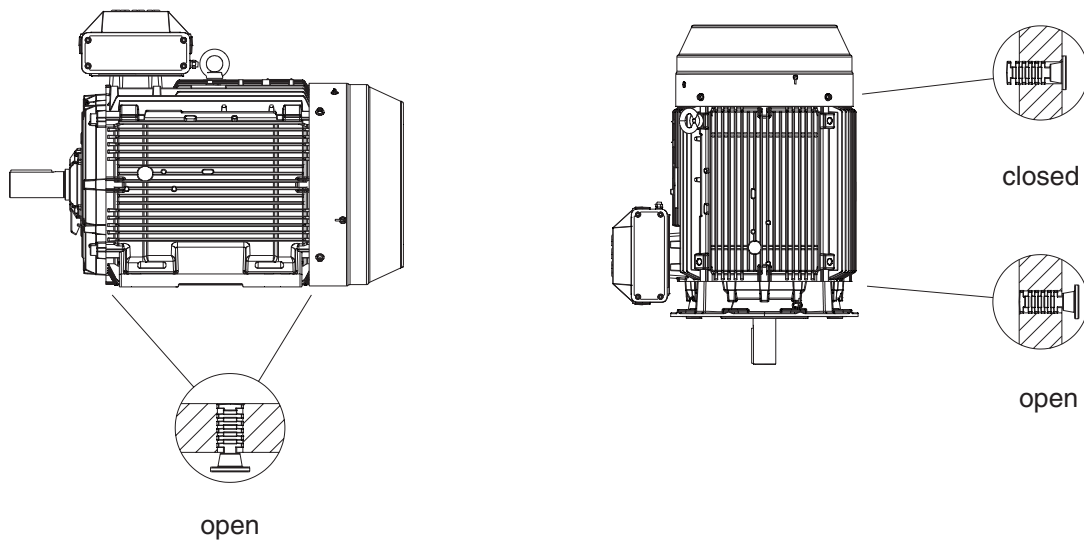
Air cooled motors are constructed with cast iron frame, feet and bearing housing.

Liquid cooled motors are constructed with welded steel frame and feet, and cast iron bearing housing.

## Drain holes

All motors are fitted with drain holes and closable plugs. The plugs are open on delivery. When mounting the motor, ensure that the drain holes face downwards.

In case of vertical mounting, the 280 to 400 size motors' upper plug should be hammered home completely. The lowest plug(s) on the end shields should be open. In very dusty environments, all plugs could be hammered home.



# Terminal box for frame sizes 280 to 400

The terminal box can be turned 4 x 90°, to allow cable entry from either side of the motor.

Degree of protection of standard terminal box is IP 55.

The terminal box is equipped with cable glands or cable boxes as standard.

To enable the supply of suitable terminations for the motor, please state cable type, quantity and size when ordering. Non-standard design of terminal boxes, e.g. size, degree of protection, are available as options.

## Co-ordination of terminal boxes and cable entries for frame sizes 280 to 400

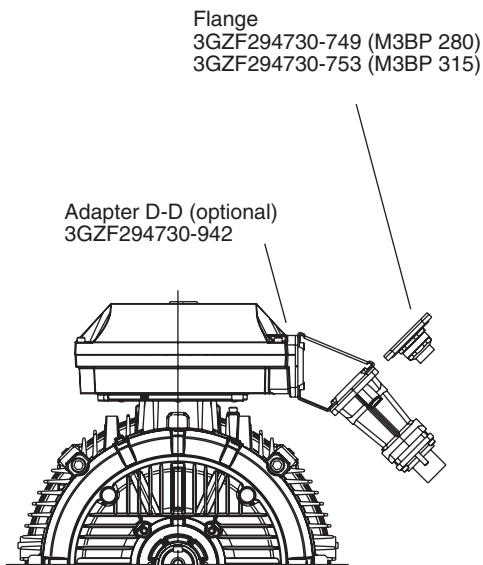
The terminal box is equipped with cable glands or cable boxes as standard according to the table below. Other types are available on request.

Note correct variant code according to motor nominal speed.

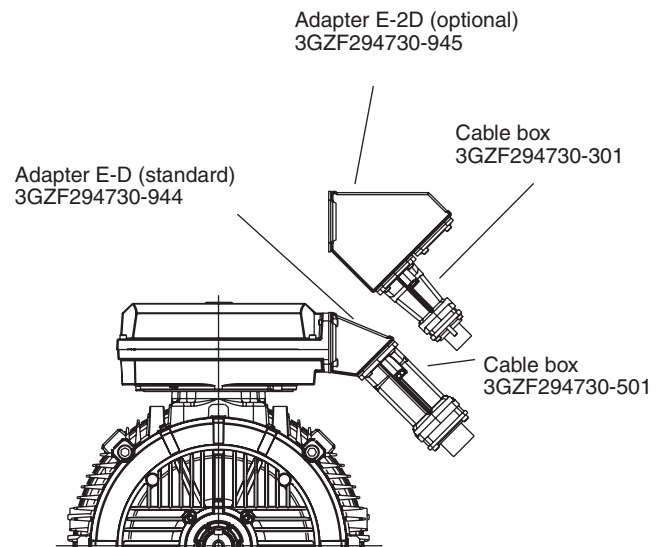
EMC-cable connection is recommended; this is available as variant code 704. Please consult ABB's manual 'Grounding and cabling of the drive systems' (Code: 3AFY 61201998).

| Motor size | Variant code | Terminal box | Max amps D/Y | Terminal box opening | Flange or adapter | Cable box or cable gland | Gland thread | Cable diameter mm | Max. conn. cable area |
|------------|--------------|--------------|--------------|----------------------|-------------------|--------------------------|--------------|-------------------|-----------------------|
| 280SMB     | 705          | 210          | 260/150      | C                    | 3GZF294730-748    | 2x 3GZF294730-612        | 2xM50x1.5    | 2x 26-35          | 2x150                 |
| 315SMC     | 705          | 370          | 470/270      | D                    | 3GZF294730-753    | 2x 3GZF294730-613        | 2xM63x1.5    | 2x 32-49          | 2x240                 |
| 315MLA     | 705          | 370          | 470/270      | D                    | 3GZF294730-753    | 2x 3GZF294730-613        | 2xM63x1.5    | 2x 32-49          | 2x240                 |
| 315LKB     | 705          | 370          | 470/270      | D                    | 3GZF294730-753    | 2x 3GZF294730-613        | 2xM63x1.5    | 2x 32-49          | 2x240                 |
| 315LKC     | 705          | 370          | 470/270      | D                    | 3GZF294730-753    | 2x 3GZF294730-613        | 2xM63x1.5    | 2x 32-49          | 2x240                 |
| 355SMB     | 705          | 370          | 640/370      | D                    | 3GZF294730-753    | 2x 3GZF294730-613        | 2xM63x1.5    | 2x 32-49          | 2x240                 |
| 355MLB     | 705          | 370          | 640/370      | D                    | 3GZF294730-753    | 2x 3GZF294730-613        | 2xM63x1.5    | 2x 32-49          | 2x240                 |
| 355LKB     | 705          | 370          | 640/370      | D                    | 3GZF294730-753    | 2x 3GZF294730-613        | 2xM63x1.5    | 2x 32-49          | 2x240                 |
| 400LC      | 705          | 370          | 640/370      | D                    | 3GZF294730-753    | 2x 3GZF294730-613        | 2xM63x1.5    | 2x 32-49          | 2x240                 |
| 280SMB     | 706          | 210          | 260/150      | C                    | 3GZF294730-749    | 2x 3GZF294730-613        | 2xM63x1.5    | 2x 32-49          | 2x150                 |
| 315SMC     | 706          | 370          | 470/270      | D                    | 3GZF294730-753    | 2x 3GZF294730-613        | 2xM63x1.5    | 2x 32-49          | 2x240                 |
| 315MLA     | 706          | 370          | 470/270      | D                    | 3GZF294730-753    | 2x 3GZF294730-613        | 2xM63x1.5    | 2x 32-49          | 2x240                 |
| 315LKB     | 706          | 370          | 470/270      | D                    | 3GZF294730-753    | 2x 3GZF294730-613        | 2xM63x1.5    | 2x 32-49          | 2x240                 |
| 315LKC     | 706          | 370          | 470/270      | D                    | 3GZF294730-753    | 2x 3GZF294730-613        | 2xM63x1.5    | 2x 32-49          | 2x240                 |
| 355SMB     | 706          | 370          | 640/370      | D                    | 3GZF294730-753    | 2x 3GZF294730-613        | 2xM63x1.5    | 2x 32-49          | 2x240                 |
| 355MLB     | 706          | 370          | 640/370      | D                    | 3GZF294730-753    | 2x 3GZF294730-613        | 2xM63x1.5    | 2x 32-49          | 2x240                 |
| 355LKB     | 706          | 370          | 640/370      | D                    | 3GZF294730-753    | 2x 3GZF294730-613        | 2xM63x1.5    | 2x 32-49          | 2x240                 |
| 400LC      | 706          | 370          | 640/370      | D                    | 3GZF294730-753    | 2x 3GZF294730-613        | 2xM63x1.5    | 2x 32-49          | 2x240                 |
| 280SMB     | 707          | 210          | 260/150      | C                    | 3GZF294730-749    | 2x 3GZF294730-613        | 2xM63x1.5    | 2x 32-49          | 2x150                 |
| 315SMC     | 707          | 370          | 470/270      | D                    | 3GZF294730-753    | 2x 3GZF294730-613        | 2xM63x1.5    | 2x 32-49          | 2x240                 |
| 315MLA     | 707          | 370          | 470/270      | D                    | 3GZF294730-753    | 2x 3GZF294730-613        | 2xM63x1.5    | 2x 32-49          | 2x240                 |
| 315LKB     | 707          | 370          | 470/270      | D                    | 3GZF294730-753    | 2x 3GZF294730-613        | 2xM63x1.5    | 2x 32-49          | 2x240                 |
| 315LKC     | 707          | 370          | 470/270      | D                    | 3GZF294730-753    | 2x 3GZF294730-613        | 2xM63x1.5    | 2x 32-49          | 2x240                 |
| 355SMB     | 707          | 370          | 640/370      | D                    | 3GZF294730-753    | 2x 3GZF294730-613        | 2xM63x1.5    | 2x 32-49          | 2x240                 |
| 355MLB     | 707          | 370          | 640/370      | D                    | 3GZF294730-753    | 2x 3GZF294730-613        | 2xM63x1.5    | 2x 32-49          | 2x240                 |
| 355LKB     | 707          | 370          | 640/370      | D                    | 3GZF294730-753    | 2x 3GZF294730-613        | 2xM63x1.5    | 2x 32-49          | 2x240                 |
| 400LC      | 707          | 750          | 950/550      | E                    | 3GZF294730-944    | 3GZF294730-301           |              | 2x 48-60          | 4x240                 |
| 280SMB     | 708          | 210          | 260/150      | C                    | 3GZF294730-749    | 2x 3GZF294730-613        | 2xM63x1.5    | 2x 32-49          | 2x150                 |
| 315SMC     | 708          | 370          | 470/270      | D                    | 3GZF294730-753    | 2x 3GZF294730-613        | 2xM63x1.5    | 2x 32-49          | 2x240                 |
| 315MLA     | 708          | 370          | 470/270      | D                    | 3GZF294730-753    | 2x 3GZF294730-613        | 2xM63x1.5    | 2x 32-49          | 2x240                 |
| 315LKB     | 708          | 370          | 470/270      | D                    | 3GZF294730-753    | 2x 3GZF294730-613        | 2xM63x1.5    | 2x 32-49          | 2x240                 |
| 315LKC     | 708          | 370          | 470/270      | D                    | 3GZF294730-753    | 2x 3GZF294730-613        | 2xM63x1.5    | 2x 32-49          | 2x240                 |
| 355SMB     | 708          | 370          | 640/370      | D                    | 3GZF294730-753    | 2x 3GZF294730-613        | 2xM63x1.5    | 2x 32-49          | 2x240                 |
| 355MLB     | 708          | 750          | 950/550      | E                    | 3GZF294730-944    | 3GZF294730-301           |              | 2x 48-60          | 4x240                 |
| 355LKB     | 708          | 750          | 950/550      | E                    | 3GZF294730-944    | 3GZF294730-301           |              | 2x 48-60          | 4x240                 |
| 400LC      | 708          | 750          | 950/550      | E                    | 3GZF294730-945    | 2x 3GZF294730-301        |              | 2x(2x 48-60)      | 4x240                 |

## Motor sizes 280 to 315

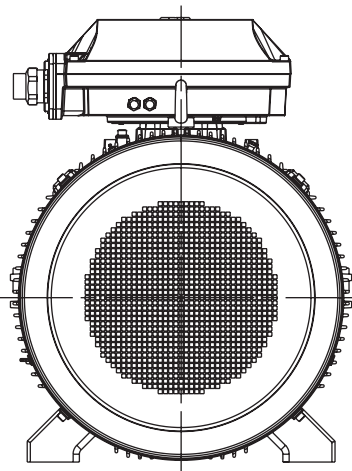


## Motor sizes 355 and 400

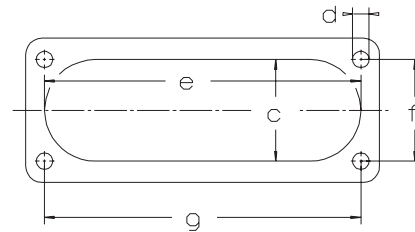


## Auxiliary devices (view from N-end)

Cable glands for auxiliary devices  
as standard 2 x M20 x 1.5.



## Motor sizes 280 to 400 Dimensions for terminal box inlets



| Inlet | c   | e   | f   | g   | d   |
|-------|-----|-----|-----|-----|-----|
| C     | 62  | 193 | 62  | 193 | M8  |
| D     | 100 | 300 | 80  | 292 | M10 |
| E     | 115 | 370 | 100 | 360 | M12 |

# Terminal box for frame sizes 500 and 560

The terminal box can be turned 180°, to allow cable entry from either side of the motor.

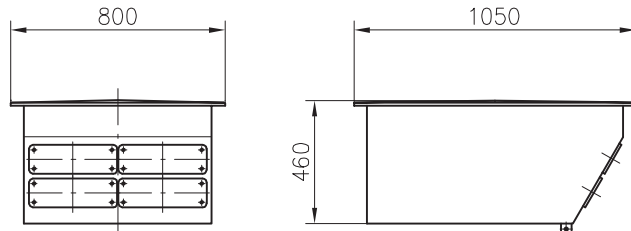
Degree of protection of standard terminal box is IP 55.

The terminal box is equipped with Roxtec cable bushings as standard.

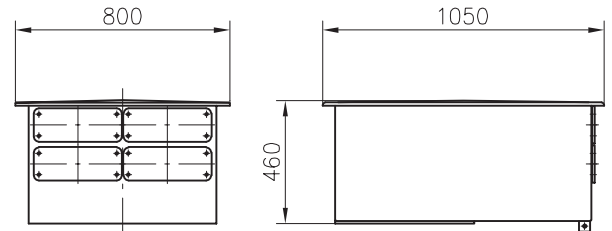
To enable the supply of suitable terminations for the motor, please state cable type, quantity and size when ordering. Non-standard design of terminal boxes, e.g. size, degree of protection, are available as options.

## Main terminal box

### Horizontal machine

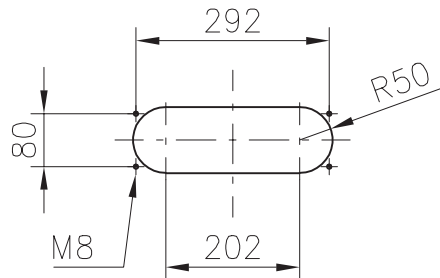


### Vertical machine

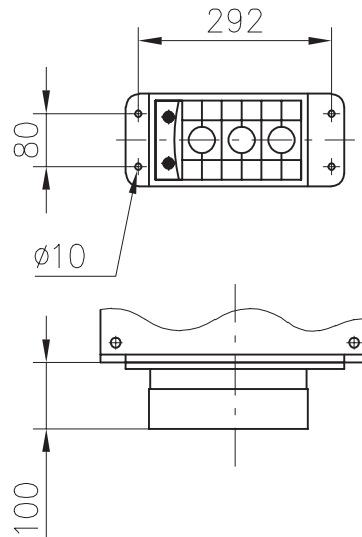


## Cable bushings

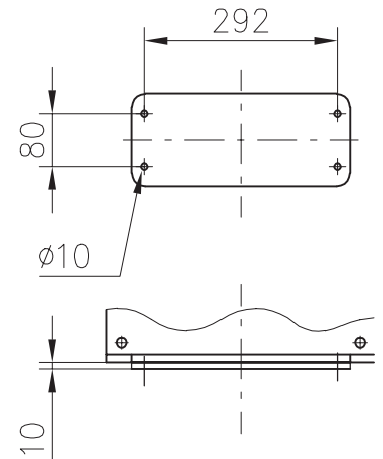
### FL33 opening



### Roxtec



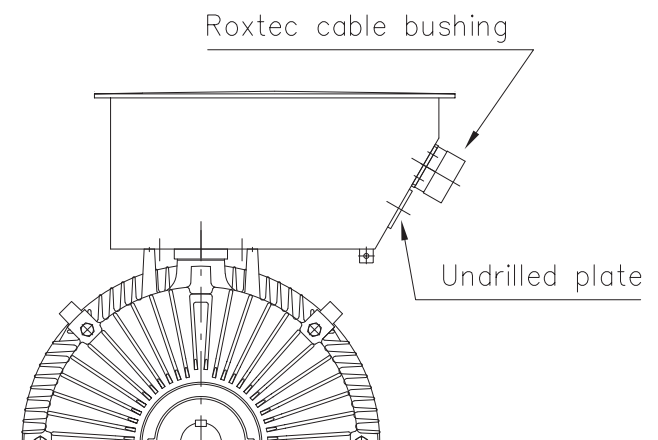
### Undrilled plate



## Roxtec cable bushing / FL33 opening

| Type of the cable | Number of cables | Max. outer diameter of the cables (mm) |
|-------------------|------------------|----------------------------------------|
| 3-phase           | 1                | 70 - 98                                |
|                   | 2                | 50 - 70                                |
|                   | 3 - 6            | 32 - 50                                |
|                   | 7 - 8            | 22 - 32                                |
| 1-phase           | 3 - 6            | 32 - 50                                |
|                   | 9 - 12           | 22 - 32                                |

## Frame sizes 500 to 560



# Bearings

The horizontally mounted motors are provided with single-row deep groove ball bearings as listed in the table.

Vertical mounting of motor sizes 280 to 400 must be reviewed with ABB case-by-case.

Motor sizes 500 and 560 can be mounted also in vertical position. Vertical mounting requires a single-row angular contact ball bearing at N-end as listed in the table.

| Motor size        | Mounting   | Standard design Bearings |                 |
|-------------------|------------|--------------------------|-----------------|
|                   |            | D-end                    | N-end           |
| 280 <sup>1)</sup> | Horizontal | 6316/C3                  | 6316M/C3 VL0241 |
| 315 <sup>1)</sup> | Horizontal | 6319/C3                  | 6316M/C3 VL0241 |
| 355 <sup>1)</sup> | Horizontal | 6322/C3                  | 6316M/C3 VL0241 |
| 400 <sup>1)</sup> | Horizontal | 6324/C3                  | 6319M/C3 VL0241 |
| 500               | Horizontal | 6330/C3                  | 6330/C3         |
| 500               | Vertical   | 6330/C3                  | 7330 BM         |
| 560               | Horizontal | 6338/C3                  | 6338/C3         |
| 560               | Vertical   | 6338/C3                  | 7338 BM         |

<sup>1)</sup> Vertical mounted motors on request

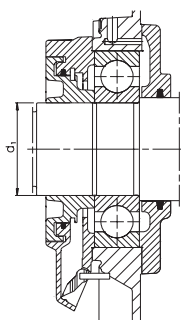
## Bearing seals

The size and type of suitable seals are in accordance with the table below:

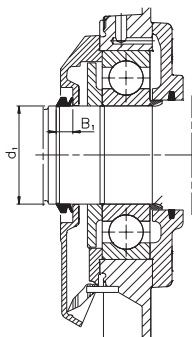
| Motor size | Standard design D-end | N-end           | Alternative design D-end                | N-end                                   |
|------------|-----------------------|-----------------|-----------------------------------------|-----------------------------------------|
| 280        | Axial seal VS80       | Axial seal VS80 | Labyrinth seal<br>Radial seal 80x110x10 | Labyrinth seal<br>Radial seal 80x110x10 |
| 315        | Axial seal VS95       | Axial seal VS80 | Labyrinth seal<br>Radial seal 95x125x10 | Labyrinth seal<br>Radial seal 80x110x10 |
| 355        | Labyrinth seal        | Axial seal VS80 | -                                       | Labyrinth seal                          |
| 400        | Labyrinth seal        | Axial seal VS95 | -                                       | Labyrinth seal                          |
| 500 - 560  | Labyrinth seal        | Labyrinth seal  | Inpro-seal                              | Inpro-seal                              |

### Motor sizes 280 to 400

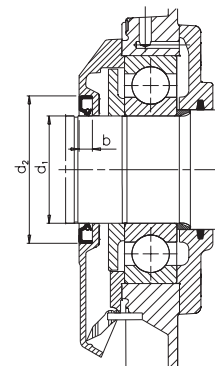
Labyrinth seal



V-ring

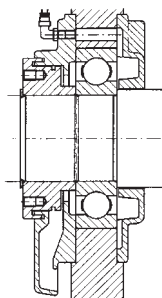


Radial seal

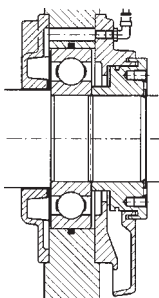


### Motor sizes 500 and 560

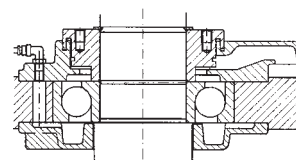
D-end  
Axially locked



N-end  
Axially free



N-end in vertical machines  
Angular contact ball bearing



# Bearing life

The nominal life  $L_{10h}$  of a bearing is defined according to ISO as the number of operating hours achieved or exceeded by 90% of identical bearings in a large test series under certain specified conditions. 50% of the tested bearings achieve at least five times the  $L_{10h}$  life. The values in the table are calculated without any external forces on motor bearings.

| Motor size | Mounting   | $L_{10h}$ [hours] |
|------------|------------|-------------------|
| 280 to 400 | Horizontal | $\geq 80000$      |
| 280 to 400 | Vertical   | On request        |
| 500        | Horizontal | $\geq 58000$      |
| 500        | Vertical   | $\geq 63000$      |
| 560        | Horizontal | $\geq 42000$      |
| 560        | Vertical   | $\geq 50000$      |

## Lubrication

Permanent magnet motors have grease valve lubrication for lubrication in service. The lubrication intervals and grease quantity are stated in the maintenance instructions, which are delivered with the motor. If a motor is equipped with a lubrication instruction plate, the instructions on the plate should be followed.

On delivery the motors are lubricated with Esso Unirex S2 grease, which is the recommended grease type. The maintenance instructions include other compatible grease types.

## Pulley diameter

When the desired bearing life has been determined, the minimum permissible pulley diameter can be calculated using  $F_R$ , as follows:

$$D = \frac{1.9 \cdot 10^7 \cdot K \cdot P}{n \cdot F_R}$$

where:

$D$  = diameter of pulley, mm

$P$  = power requirement, kW

$n$  = motor speed, r/min

$K$  = belt tension factor, dependent on belt type and type of duty. A common value for V-belts is 2.5.

$F_R$  = permissible radial force

# Permissible loadings on the shaft end

The table below gives the permissible radial force at shaft end ( $FX_{\max}$ ) in Newton, assuming zero axial force. The values are based on 40,000 hours bearing life on normal conditions for motor sizes 280 to 400. For motor sizes 500 and 560 values are based on 30,000 hours bearing life.

| Motor size | Length of shaft extension | Ball bearings                |
|------------|---------------------------|------------------------------|
|            | E (mm)                    | 40,000 hours $FX_{\max}$ (N) |
| 280 SM_    | 140                       | 5000                         |
| 315 SM_    | 170                       | 5000                         |
| 315 ML_    | 170                       | 5000                         |
| 315 LK_    | 170                       | 5000                         |
| 355 SM_    | 210                       | 5000                         |
| 355 ML_    | 210                       | 5000                         |
| 355 LK_    | 210                       | 5000                         |
| 400 L_     | 210                       | 5000                         |

Motors are foot-mounted IM B3 version with the force directed radially. In some cases, the strength of the shaft affects the permissible forces.

Permissible loads of simultaneous radial and axial forces will be supplied on request.

| Motor size | Length of shaft extension<br>E (mm) | 30,000 hours                 |                              |                              |
|------------|-------------------------------------|------------------------------|------------------------------|------------------------------|
|            |                                     | 300 r/min<br>$FX_{\max}$ (N) | 600 r/min<br>$FX_{\max}$ (N) | 850 r/min<br>$FX_{\max}$ (N) |
| 500        | 250                                 | 12000                        | 6000                         | 4000                         |
| 560        | 300                                 | 13600                        | 5600                         | 3000                         |

# Rating plates

## Motor sizes 280 to 400

ABB Oy, Electrical Machines  
LV Motors, Vaasa, Finland

3 ~ Motor M3BJ 315LKC 12 B3

PERMANENT MAGNET SYNCHR. MOTOR

S1 SPEC.INSUL. No. 0312-010512426

Ins.cl. F IP 55

| V     | Hz | kW  | r/min | A   | cos $\varphi$ | Duty |
|-------|----|-----|-------|-----|---------------|------|
| 370 D | 43 | 200 | 430   | 352 | 0,93          |      |
| 640 Y | 43 | 200 | 430   | 203 | 0,93          |      |
|       |    |     |       |     |               |      |
|       |    |     |       |     |               |      |
|       |    |     |       |     |               |      |
|       |    |     |       |     |               |      |

Prod. code 3GBJ316830-ADG183707

INSULATED BEARINGS AT N-END

6319/C3 Nmax 6316M/C3VLO241 r/min 1605 kg

IEC 60034-1

## Motor sizes 280 to 400

### Lubrication plate

ABB

**Bearings**

6319/C3 6316M/C3VLO241

**Regreasing amount**

90 g 70 g

**Regreasing intervals valid with following running speed and ambient temperature.**

430 rpm

40 °C

**Regreasing interval in duty hours** 3200 h

**Grease** ESSO UNIREX S2

3GZF194730-75

See respective "Motor Manual"

## Motor sizes 500 to 560

ABB CE ABB Oy  
Made in Helsinki, Finland

|            |                   |              |         |
|------------|-------------------|--------------|---------|
| Type       | AMZ 0500LN10 RAM  | No           | 7654321 |
| Year       | 2004              | Phases       | 3~      |
| Duty       | S9, ACS CONVERTER | Output       | 1468 kW |
| Connection | Y                 | Voltage      | 690 V   |
| Insul.cl.  | F                 | Frequency    | 50 Hz   |
| Weight     | 6800 kg           | Speed        | 600 rpm |
| IP         | 55                | Current      | 1457 A  |
| IC         | 416               | Power factor | 0.93    |
| IM         | 1001              | Tmax/Tn      | 1.6     |

PERMANENT MAGNET SYNCHRONOUS MACHINE

IEC 60034-1

## Motor sizes 500 to 560

### Lubrication plate

DRIVE END (DE) BEARING 6330/C3

NON DRIVE END (NDE) BEARING 6330/C3

LUBRICATION INTERVAL 3200 DUTY HOURS

QUANTITY OF GREASE DE 100 GRAMS NDE 100 GRAMS

APPLICABLE GREASES: ESSO UNIREX S2, FAG ARCANOL TEMP110

DELIVERED FROM FACTORY WITH GREASE ESSO UNIREX S2

FOR ADDITIONAL INFORMATION SEE MAINTENANCE MANUAL

# Ordering information

When placing an order, please state the following minimum data in the order, as in the example.

The product code of the motor is composed in accordance with the following example.

Motor type M3BJ 280 SMB  
Pole number 12  
Mounting arrangement (IM code) IM B3 (IM 1001)  
Product code if stated 3GBJ316 220-ADG 705  
More variant codes if needed

## Motor size

| A    | B       | C    | D, E, F, G |       |   |   |   |    |     |    |    |    |    |  |
|------|---------|------|------------|-------|---|---|---|----|-----|----|----|----|----|--|
| M3BJ | 280 SMB | 3GBJ | 316        | 220   | - | A | D | G  | 705 |    |    |    |    |  |
|      |         |      | 1 - 4      | 5 - 6 | 7 | 8 | 9 | 10 | 11  | 12 | 13 | 14 | 15 |  |

- A** Motor type
- B** Motor size
- C** Product code
- D** Mounting arrangement code
- E** Voltage and frequency code
- F** Generation code
- G** Variant codes

## Explanation of the product code:

### Positions 1 to 4

**3GBJ** = Totally enclosed fan cooled permanent magnet motor with cast iron frame

**3GLJ** = Totally enclosed water cooled permanent magnet motor with welded steel frame

### Positions 5 and 6

#### IEC-frame

**28** = 280  
**31** = 315  
**35** = 355  
**40** = 400

### Position 7

#### Speed (Pole pairs)

6 = 12 poles

### Position 8 to 10

Serial number

### Position 11

- (dash)

### Position 12

#### Mounting arrangement

**A** = Foot-mounted, top-mounted terminal box

**B** = Flange-mounted motors available on request

### Position 13

#### Voltage and frequency code

Network voltage 400 V to 690 V

### Position 14

#### Generation code

**C** = Liquid cooled motor

**G** = Air cooled motor

### Position 15

#### Variant codes

**705** = 220 r/min at 400 VD/690 VY

**706** = 300 r/min at 400 VD/690 VY

**707** = 430 r/min at 400 VD/690 VY

**708** = 600 r/min at 400 VD/690 VY

Base speed and output depends on the network voltage.

See technical data for values at different network voltages.

**The product code must be followed, if needed, by variant codes.**

**Motors, frame sizes 280 to 400, include variant codes 405, 445 and 701 as standard.**

|     |  |          |   |   |   |   |     |   |  |
|-----|--|----------|---|---|---|---|-----|---|--|
| AMZ |  | 0500LS10 |   |   |   |   | RAM |   |  |
| 1   |  | 2        | 3 | 4 | 5 | 6 | 7   | 8 |  |

## Explanation of the type designation:

### Position 1

#### Type of machine

Synchronous motor

### Position 2

#### Frame size (shaft height in millimeters)

Always four digits, i.e. 0500 for 500 shaft height

### Position 3

#### Frame length code

### Position 4

#### Stator core length code

### Position 5

#### Number of poles

### Position 6

#### IC/IP combination

**J** = water jacket IC 71W/IP(55, 56), welded steel frame

**R** = total enclosed fan cool IC 41(1,6,7)/ IP(55, 56), cast iron frame

### Position 7

#### Bearing type

**A** = antifriction bearings

### Position 8

#### Type of excitation

**M** = permanent magnet rotor

All motor characteristics, nominal values and optional features should be specified when placing an order.

# Permanent magnet synchronous motors

## 400 V Technical data

IC 416: Separate cooling or liquid cooled motors

Suitable for constant torque 0 -  $n_n$ , constant power  $n_n$  -  $n_{max}$

Network voltage 400 V, at motor terminals 370 V

| Output<br>kW                        | Type designation <sup>1)</sup> | Product code <sup>1)</sup> | Current<br>$I_N$<br>A | Efficiency<br>Full load <sup>2)</sup><br>% | Torque<br>$T_N$<br>Nm | Power<br>factor<br>$\cos \varphi$ | Torque<br>$\frac{T_{max}}{T_N}$ <sup>4)</sup> | Moment<br>of inertia<br>$J=1/4GD^2$<br>kgm <sup>2</sup> | Maximum<br>speed,<br>$n_{max}$<br>r/min | Weight<br>approx.<br>kg |
|-------------------------------------|--------------------------------|----------------------------|-----------------------|--------------------------------------------|-----------------------|-----------------------------------|-----------------------------------------------|---------------------------------------------------------|-----------------------------------------|-------------------------|
| <b><math>n_n = 127</math> r/min</b> |                                |                            |                       |                                            |                       |                                   |                                               |                                                         |                                         |                         |
| 17                                  | M3_J 280SMB                    | 3G_J286220-_D_183705       | 34                    | 81.1                                       | 1257                  | 0.94                              | 1.0                                           | 2.2                                                     | 152                                     | 660                     |
| 23                                  | M3_J 315SMC                    | 3G_J316230-_D_183705       | 44                    | 85.4                                       | 1720                  | 0.95                              | 1.1                                           | 3.9                                                     | 152                                     | 890                     |
| 36                                  | M3_J 315MLA                    | 3G_J316410-_D_183705       | 68                    | 86.7                                       | 2695                  | 0.95                              | 1.1                                           | 5.8                                                     | 152                                     | 1125                    |
| 45                                  | M3_J 315LKB                    | 3G_J316820-_D_183705       | 84                    | 87.5                                       | 3416                  | 0.97                              | 1.1                                           | 7.8                                                     | 152                                     | 1430                    |
| 58                                  | M3_J 315LKC                    | 3G_J316830-_D_183705       | 107                   | 89.2                                       | 4327                  | 0.95                              | 1.1                                           | 9.8                                                     | 152                                     | 1605                    |
| 63                                  | M3_J 355SMB                    | 3G_J356220-_D_183705       | 114                   | 88.7                                       | 4727                  | 0.97                              | 1.2                                           | 17.1                                                    | 152                                     | 1780                    |
| 86                                  | M3_J 355MLB                    | 3G_J356420-_D_183705       | 155                   | 89.2                                       | 6458                  | 0.97                              | 1.2                                           | 22.4                                                    | 152                                     | 2210                    |
| 100                                 | M3_J 355LKB                    | 3G_J356820-_D_183705       | 179                   | 90.0                                       | 7539                  | 0.97                              | 1.2                                           | 28.5                                                    | 152                                     | 2690                    |
| 126                                 | M3_J 400LC                     | 3G_J406530-_D_183705       | 221                   | 91.0                                       | 9469                  | 0.98                              | 1.1                                           | 41.1                                                    | 152                                     | 3280                    |
| 174                                 | AMZ 0500LE10 _AM               |                            | 310                   | 93.3                                       | 13084                 | 0.93                              | 1.2                                           | 68                                                      | 152                                     | 5240                    |
| 237                                 | AMZ 0500LJ10 _AM               |                            | 414                   | 93.9                                       | 17822                 | 0.95                              | 1.2                                           | 90                                                      | 152                                     | 6020                    |
| 306                                 | AMZ 0500LN10 _AM               |                            | 533                   | 94.4                                       | 23010                 | 0.94                              | 1.2                                           | 113                                                     | 152                                     | 6800                    |
| 386                                 | AMZ 0500LR10 _AM               |                            | 679                   | 94.7                                       | 29026                 | 0.93                              | 1.2                                           | 135                                                     | 152                                     | 7580                    |
| 479                                 | AMZ 0560LQ10 _AM               |                            | 832                   | 95.1                                       | 36019                 | 0.94                              | 1.3                                           | 224                                                     | 152                                     | 10490                   |
| 576                                 | AMZ 0560LS10 _AM               |                            | 1003                  | 95.4                                       | 43313                 | 0.93                              | 1.4                                           | 265                                                     | 152                                     | 11480                   |
| 667                                 | AMZ 0560LU10 _AM               |                            | 1149                  | 95.4                                       | 50156                 | 0.94                              | 1.3                                           | 306                                                     | 152                                     | 12470                   |
| <b><math>n_n = 173</math> r/min</b> |                                |                            |                       |                                            |                       |                                   |                                               |                                                         |                                         |                         |
| 23                                  | M3_J 280SMB                    | 3G_J286220-_D_183706       | 46                    | 85.6                                       | 1280                  | 0.93                              | 1.0                                           | 2.2                                                     | 208                                     | 660                     |
| 36                                  | M3_J 315SMC                    | 3G_J316230-_D_183706       | 68                    | 87.3                                       | 1980                  | 0.94                              | 1.0                                           | 3.9                                                     | 208                                     | 890                     |
| 51                                  | M3_J 315MLA                    | 3G_J316410-_D_183706       | 95                    | 88.9                                       | 2835                  | 0.95                              | 1.0                                           | 5.8                                                     | 208                                     | 1125                    |
| 63                                  | M3_J 315LKB                    | 3G_J316820-_D_183706       | 116                   | 90.8                                       | 3496                  | 0.94                              | 1.1                                           | 7.8                                                     | 208                                     | 1430                    |
| 87                                  | M3_J 315LKC                    | 3G_J316830-_D_183706       | 160                   | 90.8                                       | 4774                  | 0.93                              | 1.1                                           | 9.8                                                     | 208                                     | 1605                    |
| 86                                  | M3_J 355SMB                    | 3G_J356220-_D_183706       | 152                   | 91.2                                       | 4760                  | 0.97                              | 1.2                                           | 17.1                                                    | 208                                     | 1780                    |
| 115                                 | M3_J 355MLB                    | 3G_J356420-_D_183706       | 203                   | 92.0                                       | 6360                  | 0.97                              | 1.2                                           | 22.4                                                    | 208                                     | 2210                    |
| 130                                 | M3_J 355LKB                    | 3G_J356820-_D_183706       | 230                   | 92.9                                       | 7154                  | 0.95                              | 1.3                                           | 28.5                                                    | 208                                     | 2690                    |
| 173                                 | M3_J 400LC                     | 3G_J406530-_D_183706       | 299                   | 93.2                                       | 9545                  | 0.97                              | 1.1                                           | 41.1                                                    | 208                                     | 3280                    |
| 238                                 | AMZ 0500LE10 _AM               |                            | 418                   | 94.7                                       | 13138                 | 0.93                              | 1.2                                           | 68                                                      | 208                                     | 5240                    |
| 331                                 | AMZ 0500LJ10 _AM               |                            | 576                   | 95.3                                       | 18272                 | 0.94                              | 1.2                                           | 90                                                      | 208                                     | 6020                    |
| 432                                 | AMZ 0500LN10 _AM               |                            | 754                   | 95.6                                       | 23847                 | 0.93                              | 1.2                                           | 113                                                     | 208                                     | 6800                    |
| 529                                 | AMZ 0500LR10 _AM               |                            | 926                   | 95.9                                       | 29202                 | 0.92                              | 1.3                                           | 135                                                     | 208                                     | 7580                    |
| 656                                 | AMZ 0560LQ10 _AM               |                            | 1134                  | 96.2                                       | 36213                 | 0.93                              | 1.4                                           | 224                                                     | 208                                     | 10490                   |
| 765                                 | AMZ 0560LS10 _AM               |                            | 1300                  | 96.3                                       | 42230                 | 0.95                              | 1.3                                           | 265                                                     | 208                                     | 11480                   |
| 893                                 | AMZ 0560LU10 _AM               |                            | 1516                  | 96.4                                       | 49296                 | 0.95                              | 1.3                                           | 306                                                     | 208                                     | 12470                   |
| <b><math>n_n = 220</math> r/min</b> |                                |                            |                       |                                            |                       |                                   |                                               |                                                         |                                         |                         |
| 30                                  | M3_J 280SMB                    | 3G_J286220-_D_183705       | 58                    | 88.0                                       | 1303                  | 0.92                              | 1.0                                           | 2.2                                                     | 264                                     | 660                     |
| 40                                  | M3_J 315SMC                    | 3G_J316230-_D_183705       | 75                    | 90.5                                       | 1743                  | 0.93                              | 1.1                                           | 3.9                                                     | 264                                     | 890                     |
| 63                                  | M3_J 315MLA                    | 3G_J316410-_D_183705       | 115                   | 91.4                                       | 2734                  | 0.93                              | 1.1                                           | 5.8                                                     | 264                                     | 1125                    |
| 80                                  | M3_J 315LKB                    | 3G_J316820-_D_183705       | 143                   | 91.8                                       | 3472                  | 0.95                              | 1.1                                           | 7.8                                                     | 264                                     | 1430                    |
| 100                                 | M3_J 315LKC                    | 3G_J316830-_D_183705       | 181                   | 92.7                                       | 4350                  | 0.93                              | 1.1                                           | 9.8                                                     | 264                                     | 1605                    |
| 110                                 | M3_J 355SMB                    | 3G_J356220-_D_183705       | 192                   | 92.6                                       | 4769                  | 0.96                              | 1.2                                           | 17.1                                                    | 264                                     | 1780                    |
| 150                                 | M3_J 355MLB                    | 3G_J356420-_D_183705       | 263                   | 92.9                                       | 6501                  | 0.96                              | 1.2                                           | 22.4                                                    | 264                                     | 2210                    |
| 175                                 | M3_J 355LKB                    | 3G_J356820-_D_183705       | 304                   | 93.3                                       | 7591                  | 0.96                              | 1.2                                           | 28.5                                                    | 264                                     | 2690                    |
| 220                                 | M3_J 400LC                     | 3G_J406530-_D_183705       | 375                   | 94.1                                       | 9547                  | 0.97                              | 1.1                                           | 41.1                                                    | 264                                     | 3280                    |
| 305                                 | AMZ 0500LE10 _AM               |                            | 534                   | 95.6                                       | 13240                 | 0.93                              | 1.2                                           | 68                                                      | 264                                     | 5240                    |
| 428                                 | AMZ 0500LJ10 _AM               |                            | 747                   | 96.1                                       | 18579                 | 0.93                              | 1.3                                           | 90                                                      | 264                                     | 6020                    |
| 541                                 | AMZ 0500LN10 _AM               |                            | 933                   | 96.3                                       | 23484                 | 0.93                              | 1.2                                           | 113                                                     | 264                                     | 6800                    |
| 668                                 | AMZ 0560LL10 _AM               |                            | 1147                  | 96.6                                       | 28997                 | 0.94                              | 1.3                                           | 183                                                     | 264                                     | 9500                    |
| 896                                 | AMZ 0560LR10 _AM               |                            | 1518                  | 96.8                                       | 38895                 | 0.95                              | 1.3                                           | 245                                                     | 264                                     | 10990                   |
| 1073                                | AMZ 0560LT10 _AM               |                            | 1826                  | 96.9                                       | 46578                 | 0.94                              | 1.3                                           | 286                                                     | 264                                     | 11980                   |

<sup>1)</sup> See ordering information - section for details on motor type and product code, variant code 183 used only with air cooled, IC 416 motors  
<sup>2)</sup> Separate cooling fan power not considered in efficiency value

<sup>3)</sup> Output values and more base speeds for IEC 500 and 560 sizes on request  
<sup>4)</sup>  $T_{max}/T_N$  value represents maximum short time overloadability with inverter supply. This does not represent the pull-out torque value according to IEC.

# Permanent magnet synchronous motors

## 400 V Technical data

IC 416: Separate cooling or liquid cooled motors

Suitable for constant torque 0 -  $n_n$ , constant power  $n_n$  -  $n_{max}$

Network voltage 400 V, at motor terminals 370 V

400 V

| Output<br>kW                        | Type designation <sup>1)</sup> | Product code <sup>1)</sup> | Current<br>$I_N$<br>A | Efficiency<br>Full load <sup>2)</sup><br>% | Torque<br>$T_N$<br>Nm | Power<br>factor<br>$\cos \varphi$ | Torque<br>$\frac{T_{max}}{T_N}$ <sup>4)</sup> | Moment<br>of inertia<br>$J=1/4GD^2$<br>kgm <sup>2</sup> | Maximum<br>speed,<br>$n_{max}$<br>r/min | Weight<br>approx.<br>kg |
|-------------------------------------|--------------------------------|----------------------------|-----------------------|--------------------------------------------|-----------------------|-----------------------------------|-----------------------------------------------|---------------------------------------------------------|-----------------------------------------|-------------------------|
| <b><math>n_n = 248</math> r/min</b> |                                |                            |                       |                                            |                       |                                   |                                               |                                                         |                                         |                         |
| 32                                  | M3_J 280SMB                    | 3G_J286220-_D_183707       | 59                    | 89.5                                       | 1216                  | 0.93                              | 1.0                                           | 2.2                                                     | 298                                     | 660                     |
| 46                                  | M3_J 315SMC                    | 3G_J316230-_D_183707       | 83                    | 91.1                                       | 1772                  | 0.95                              | 1.1                                           | 3.9                                                     | 298                                     | 890                     |
| 72                                  | M3_J 315MLA                    | 3G_J316410-_D_183707       | 131                   | 92.2                                       | 2776                  | 0.93                              | 1.1                                           | 5.8                                                     | 298                                     | 1125                    |
| 87                                  | M3_J 315LKB                    | 3G_J316820-_D_183707       | 154                   | 93.1                                       | 3331                  | 0.94                              | 1.2                                           | 7.8                                                     | 298                                     | 1430                    |
| 116                                 | M3_J 315LKC                    | 3G_J316830-_D_183707       | 205                   | 93.2                                       | 4442                  | 0.94                              | 1.1                                           | 9.8                                                     | 298                                     | 1605                    |
| 116                                 | M3_J 355SMB                    | 3G_J356220-_D_183707       | 197                   | 93.1                                       | 4441                  | 0.98                              | 1.2                                           | 17.1                                                    | 298                                     | 1780                    |
| 161                                 | M3_J 355MLB                    | 3G_J356420-_D_183707       | 284                   | 94.1                                       | 6208                  | 0.94                              | 1.3                                           | 22.4                                                    | 298                                     | 2210                    |
| 193                                 | M3_J 355LKB                    | 3G_J356820-_D_183707       | 331                   | 94.4                                       | 7433                  | 0.97                              | 1.3                                           | 28.5                                                    | 298                                     | 2690                    |
| 245                                 | M3_J 400LC                     | 3G_J406530-_D_183707       | 436                   | 95.1                                       | 9429                  | 0.92                              | 1.3                                           | 41.1                                                    | 298                                     | 3280                    |
| 332                                 | AMZ 0500LE10 _AM               |                            | 571                   | 96.0                                       | 12785                 | 0.94                              | 1.2                                           | 68                                                      | 298                                     | 5240                    |
| 481                                 | AMZ 0500LJ10 _AM               |                            | 834                   | 96.4                                       | 18522                 | 0.93                              | 1.2                                           | 90                                                      | 298                                     | 6020                    |
| 619                                 | AMZ 0500LN10 _AM               |                            | 1071                  | 96.6                                       | 23836                 | 0.93                              | 1.3                                           | 113                                                     | 298                                     | 6800                    |
| 754                                 | AMZ 0560LL10 _AM               |                            | 1297                  | 96.9                                       | 29035                 | 0.93                              | 1.4                                           | 183                                                     | 298                                     | 9500                    |
| 1036                                | AMZ 0560LR10 _AM               |                            | 1811                  | 97.1                                       | 39894                 | 0.93                              | 1.4                                           | 245                                                     | 298                                     | 10990                   |
| 1320                                | AMZ 0560LU10 _AM               |                            | 2267                  | 97.2                                       | 50831                 | 0.93                              | 1.4                                           | 306                                                     | 298                                     | 12470                   |
| <b><math>n_n = 300</math> r/min</b> |                                |                            |                       |                                            |                       |                                   |                                               |                                                         |                                         |                         |
| 41                                  | M3_J 280SMB                    | 3G_J286220-_D_183706       | 77                    | 90.5                                       | 1303                  | 0.91                              | 1.0                                           | 2.2                                                     | 360                                     | 660                     |
| 63                                  | M3_J 315SMC                    | 3G_J316230-_D_183706       | 116                   | 91.7                                       | 2006                  | 0.92                              | 1.0                                           | 3.9                                                     | 360                                     | 890                     |
| 90                                  | M3_J 315MLA                    | 3G_J316410-_D_183706       | 162                   | 92.8                                       | 2864                  | 0.94                              | 1.0                                           | 5.8                                                     | 360                                     | 1125                    |
| 110                                 | M3_J 315LKB                    | 3G_J316820-_D_183706       | 197                   | 93.8                                       | 3500                  | 0.93                              | 1.1                                           | 7.8                                                     | 360                                     | 1430                    |
| 150                                 | M3_J 315LKC                    | 3G_J316830-_D_183706       | 271                   | 93.8                                       | 4786                  | 0.92                              | 1.1                                           | 9.8                                                     | 360                                     | 1605                    |
| 150                                 | M3_J 355SMB                    | 3G_J356220-_D_183706       | 258                   | 94.0                                       | 4769                  | 0.96                              | 1.2                                           | 17.1                                                    | 360                                     | 1780                    |
| 200                                 | M3_J 355MLB                    | 3G_J356420-_D_183706       | 344                   | 94.5                                       | 6355                  | 0.96                              | 1.2                                           | 22.4                                                    | 360                                     | 2210                    |
| 225                                 | M3_J 355LKB                    | 3G_J356820-_D_183706       | 393                   | 94.9                                       | 7155                  | 0.94                              | 1.3                                           | 28.5                                                    | 360                                     | 2690                    |
| 300                                 | M3_J 400LC                     | 3G_J406530-_D_183706       | 508                   | 95.3                                       | 9543                  | 0.97                              | 1.1                                           | 41.1                                                    | 360                                     | 3280                    |
| 417                                 | AMZ 0500LE10 _AM               |                            | 739                   | 96.5                                       | 13275                 | 0.92                              | 1.3                                           | 68                                                      | 360                                     | 5240                    |
| 721                                 | AMZ 0500LN10 _AM               |                            | 1227                  | 97.0                                       | 22952                 | 0.94                              | 1.3                                           | 113                                                     | 360                                     | 6800                    |
| 895                                 | AMZ 0560LL10 _AM               |                            | 1517                  | 97.2                                       | 28491                 | 0.94                              | 1.3                                           | 183                                                     | 360                                     | 9500                    |
| 1342                                | AMZ 0560LS10 _AM               |                            | 2270                  | 97.4                                       | 42720                 | 0.94                              | 1.4                                           | 265                                                     | 360                                     | 11480                   |
| <b><math>n_n = 346</math> r/min</b> |                                |                            |                       |                                            |                       |                                   |                                               |                                                         |                                         |                         |
| 46                                  | M3_J 280SMB                    | 3G_J286220-_D_183708       | 87                    | 91.8                                       | 1274                  | 0.91                              | 1.0                                           | 2.2                                                     | 415                                     | 660                     |
| 64                                  | M3_J 315SMC                    | 3G_J316230-_D_183708       | 114                   | 93.2                                       | 1750                  | 0.93                              | 1.1                                           | 3.9                                                     | 415                                     | 890                     |
| 92                                  | M3_J 315MLA                    | 3G_J316410-_D_183708       | 161                   | 93.9                                       | 2547                  | 0.95                              | 1.1                                           | 5.8                                                     | 415                                     | 1125                    |
| 115                                 | M3_J 315LKB                    | 3G_J316820-_D_183708       | 206                   | 94.7                                       | 3180                  | 0.92                              | 1.3                                           | 7.8                                                     | 415                                     | 1430                    |
| 160                                 | M3_J 315LKC                    | 3G_J316830-_D_183708       | 283                   | 94.3                                       | 4411                  | 0.94                              | 1.0                                           | 9.8                                                     | 415                                     | 1605                    |
| 161                                 | M3_J 355SMB                    | 3G_J356220-_D_183708       | 276                   | 94.7                                       | 4437                  | 0.95                              | 1.2                                           | 17.1                                                    | 415                                     | 1780                    |
| 216                                 | M3_J 355MLB                    | 3G_J356420-_D_183708       | 370                   | 95.2                                       | 5966                  | 0.96                              | 1.3                                           | 22.4                                                    | 415                                     | 2210                    |
| 246                                 | M3_J 355LKB                    | 3G_J356820-_D_183708       | 406                   | 95.3                                       | 6767                  | 0.99                              | 1.3                                           | 28.5                                                    | 415                                     | 2690                    |
| 323                                 | M3_J 400LC                     | 3G_J406530-_D_183708       | 543                   | 96.0                                       | 8908                  | 0.97                              | 1.2                                           | 41.1                                                    | 415                                     | 3280                    |
| 480                                 | AMZ 0500LE10 _AM               |                            | 831                   | 96.8                                       | 13249                 | 0.93                              | 1.3                                           | 68                                                      | 415                                     | 5240                    |
| 864                                 | AMZ 0500LN10 _AM               |                            | 1490                  | 97.3                                       | 23847                 | 0.92                              | 1.3                                           | 113                                                     | 415                                     | 6800                    |
| 1056                                | AMZ 0500LR10 _AM               |                            | 1841                  | 97.4                                       | 29147                 | 0.92                              | 1.3                                           | 135                                                     | 415                                     | 7580                    |
| 1309                                | AMZ 0560LQ10 _AM               |                            | 2256                  | 97.6                                       | 36130                 | 0.93                              | 1.4                                           | 224                                                     | 415                                     | 10490                   |
| 1503                                | AMZ 0560LU10 _AM               |                            | 2474                  | 97.9                                       | 41485                 | 0.96                              | 1.6                                           | 306                                                     | 415                                     | 12470                   |

<sup>1)</sup> See ordering information - section for details on motor type and product code, variant code 183 used only with air cooled, IC 416 motors

<sup>2)</sup> Separate cooling fan power not considered in efficiency value

<sup>3)</sup> Output values and more base speeds for IEC 500 and 560 sizes on request

<sup>4)</sup>  $T_{max}/T_N$  value represents maximum short time overloadability with inverter supply. This does not represent the pull-out torque value according to IEC.

# Permanent magnet synchronous motors

## 400 V Technical data

IC 416: Separate cooling or liquid cooled motors

Suitable for constant torque 0 -  $n_n$ , constant power  $n_n$  -  $n_{max}$

Network voltage 400 V, at motor terminals 370 V

| Output<br>kW                        | Type designation <sup>1)</sup> | Product code <sup>1)</sup> | Current<br>$I_N$<br>A | Efficiency<br>Full load <sup>2)</sup><br>% | Torque<br>$T_N$<br>Nm | Power<br>factor<br>$\cos \varphi$ | Torque<br>$\frac{T_{max}}{T_N}$ <sup>4)</sup> | Moment<br>of inertia<br>$J=1/4GD^2$<br>kgm <sup>2</sup> | Maximum<br>speed,<br>$n_{max}$<br>r/min | Weight<br>approx.<br>kg |
|-------------------------------------|--------------------------------|----------------------------|-----------------------|--------------------------------------------|-----------------------|-----------------------------------|-----------------------------------------------|---------------------------------------------------------|-----------------------------------------|-------------------------|
| <b><math>n_n = 430</math> r/min</b> |                                |                            |                       |                                            |                       |                                   |                                               |                                                         |                                         |                         |
| 55                                  | M3_J 280SMB                    | 3G_J286220-_D_183707       | 101                   | 92.7                                       | 1222                  | 0.92                              | 1.0                                           | 2.2                                                     | 516                                     | 660                     |
| 80                                  | M3_J 315SMC                    | 3G_J316230-_D_183707       | 141                   | 93.8                                       | 1776                  | 0.94                              | 1.1                                           | 3.9                                                     | 516                                     | 890                     |
| 125                                 | M3_J 315MLA                    | 3G_J316410-_D_183707       | 223                   | 94.5                                       | 2775                  | 0.93                              | 1.1                                           | 5.8                                                     | 516                                     | 1125                    |
| 150                                 | M3_J 315LKB                    | 3G_J316820-_D_183707       | 263                   | 95.0                                       | 3329                  | 0.94                              | 1.2                                           | 7.8                                                     | 516                                     | 1430                    |
| 200                                 | M3_J 315LKC                    | 3G_J316830-_D_183707       | 351                   | 95.1                                       | 4440                  | 0.94                              | 1.1                                           | 9.8                                                     | 516                                     | 1605                    |
| 200                                 | M3_J 355SMB                    | 3G_J356220-_D_183707       | 335                   | 95.1                                       | 4440                  | 0.98                              | 1.2                                           | 17.1                                                    | 516                                     | 1780                    |
| 280                                 | M3_J 355MLB                    | 3G_J356420-_D_183707       | 487                   | 95.6                                       | 6207                  | 0.94                              | 1.3                                           | 22.4                                                    | 516                                     | 2210                    |
| 335                                 | M3_J 355LKB                    | 3G_J356820-_D_183707       | 567                   | 95.8                                       | 7434                  | 0.96                              | 1.3                                           | 28.5                                                    | 516                                     | 2690                    |
| 423                                 | M3_J 400LC                     | 3G_J406530-_D_183707       | 748                   | 96.4                                       | 9384                  | 0.92                              | 1.3                                           | 41.1                                                    | 516                                     | 3280                    |
| 596                                 | AMZ 0500LE10 _AM               |                            | 1053                  | 97.2                                       | 13237                 | 0.92                              | 1.3                                           | 68                                                      | 516                                     | 5240                    |
| 834                                 | AMZ 0500LJ10 _AM               |                            | 1472                  | 97.4                                       | 18523                 | 0.92                              | 1.3                                           | 90                                                      | 516                                     | 6020                    |
| 1071                                | AMZ 0500LN10 _AM               |                            | 1846                  | 97.5                                       | 23786                 | 0.92                              | 1.3                                           | 113                                                     | 516                                     | 6800                    |
| 1298                                | AMZ 0560LL10 _AM               |                            | 2250                  | 97.7                                       | 28828                 | 0.93                              | 1.4                                           | 183                                                     | 516                                     | 9500                    |
| 1502                                | AMZ 0560LR10 _AM               |                            | 2495                  | 98.0                                       | 33358                 | 0.95                              | 1.6                                           | 245                                                     | 516                                     | 10990                   |
| <b><math>n_n = 600</math> r/min</b> |                                |                            |                       |                                            |                       |                                   |                                               |                                                         |                                         |                         |
| 80                                  | M3_J 280SMB                    | 3G_J286220-_D_183708       | 148                   | 94.1                                       | 1274                  | 0.90                              | 1.0                                           | 2.2                                                     | 720                                     | 660                     |
| 110                                 | M3_J 315SMC                    | 3G_J316230-_D_183708       | 195                   | 95.1                                       | 1750                  | 0.93                              | 1.1                                           | 3.9                                                     | 720                                     | 890                     |
| 160                                 | M3_J 315MLA                    | 3G_J316410-_D_183708       | 276                   | 95.5                                       | 2546                  | 0.95                              | 1.1                                           | 5.8                                                     | 720                                     | 1125                    |
| 200                                 | M3_J 315LKB                    | 3G_J316820-_D_183708       | 355                   | 95.8                                       | 3179                  | 0.92                              | 1.3                                           | 7.8                                                     | 720                                     | 1430                    |
| 250                                 | M3_J 315LKC                    | 3G_J316830-_D_183708       | 427                   | 95.9                                       | 3977                  | 0.95                              | 1.2                                           | 9.8                                                     | 720                                     | 1605                    |
| 250                                 | M3_J 355SMB                    | 3G_J356220-_D_183708       | 424                   | 96.0                                       | 3974                  | 0.96                              | 1.4                                           | 17.1                                                    | 720                                     | 1780                    |
| 375                                 | M3_J 355MLB                    | 3G_J356420-_D_183708       | 638                   | 96.2                                       | 5963                  | 0.95                              | 1.3                                           | 22.4                                                    | 720                                     | 2210                    |
| 425                                 | M3_J 355LKB                    | 3G_J356820-_D_183708       | 696                   | 96.2                                       | 6763                  | 0.99                              | 1.3                                           | 28.5                                                    | 720                                     | 2690                    |
| 560                                 | M3_J 400LC                     | 3G_J406530-_D_183708       | 934                   | 96.9                                       | 8904                  | 0.97                              | 1.2                                           | 41.1                                                    | 720                                     | 3280                    |
| <sup>3)</sup>                       | AMZ 0500L_10 _AM               |                            |                       |                                            |                       |                                   |                                               |                                                         |                                         |                         |
| <sup>3)</sup>                       | AMZ 0560L_10 _AM               |                            |                       |                                            |                       |                                   |                                               |                                                         |                                         |                         |

<sup>1)</sup> See ordering information - section for details on motor type and product code, variant code 183 used only with air cooled, IC 416 motors

<sup>2)</sup> Separate cooling fan power not considered in efficiency value

<sup>3)</sup> Output values and more base speeds for IEC 500 and 560 sizes on request

<sup>4)</sup>  $T_{max}/T_N$  value represents maximum short time overloadability with inverter supply. This does not represent the pull-out torque value according to IEC.

# Permanent magnet synchronous motors

## 460 V Technical data

IC 416: Separate cooling or liquid cooled motors

Suitable for constant torque 0 -  $n_n$ , constant power  $n_n$  -  $n_{max}$

Network voltage 460 V, at motor terminals 426 V

| Output<br>kW                        | Type designation <sup>1)</sup> | Product code <sup>1)</sup> | Current<br>$I_N$<br>A | Efficiency<br>Full load <sup>2)</sup><br>% | Torque<br>$T_N$<br>Nm | Power<br>factor<br>$\cos \varphi$ | Torque<br>$\frac{T_{max}}{T_N}$ <sup>4)</sup> | Moment<br>of inertia<br>$J=1/4GD^2$<br>kgm <sup>2</sup> | Maximum<br>speed,<br>$n_{max}$<br>r/min | Weight<br>approx.<br>kg |
|-------------------------------------|--------------------------------|----------------------------|-----------------------|--------------------------------------------|-----------------------|-----------------------------------|-----------------------------------------------|---------------------------------------------------------|-----------------------------------------|-------------------------|
| <b><math>n_n = 146</math> r/min</b> |                                |                            |                       |                                            |                       |                                   |                                               |                                                         |                                         |                         |
| 20                                  | M3_J 280SMB                    | 3G_J286220-_D_183705       | 34                    | 83.0                                       | 1277                  | 0.94                              | 1.0                                           | 2.2                                                     | 175                                     | 660                     |
| 27                                  | M3_J 315SMC                    | 3G_J316230-_D_183705       | 44                    | 86.9                                       | 1735                  | 0.94                              | 1.1                                           | 3.9                                                     | 175                                     | 890                     |
| 42                                  | M3_J 315MLA                    | 3G_J316410-_D_183705       | 68                    | 88.1                                       | 2718                  | 0.95                              | 1.1                                           | 5.8                                                     | 175                                     | 1125                    |
| 53                                  | M3_J 315LKB                    | 3G_J316820-_D_183705       | 84                    | 88.9                                       | 3448                  | 0.96                              | 1.1                                           | 7.8                                                     | 175                                     | 1430                    |
| 67                                  | M3_J 315LKC                    | 3G_J316830-_D_183705       | 106                   | 90.2                                       | 4352                  | 0.94                              | 1.1                                           | 9.8                                                     | 175                                     | 1605                    |
| 73                                  | M3_J 355SMB                    | 3G_J356220-_D_183705       | 113                   | 89.9                                       | 4761                  | 0.97                              | 1.2                                           | 17.1                                                    | 175                                     | 1780                    |
| 99                                  | M3_J 355MLB                    | 3G_J356420-_D_183705       | 155                   | 90.3                                       | 6500                  | 0.97                              | 1.2                                           | 22.4                                                    | 175                                     | 2210                    |
| 116                                 | M3_J 355LKB                    | 3G_J356820-_D_183705       | 179                   | 91.0                                       | 7586                  | 0.97                              | 1.2                                           | 28.5                                                    | 175                                     | 2690                    |
| 146                                 | M3_J 400LC                     | 3G_J406530-_D_183705       | 221                   | 92.0                                       | 9528                  | 0.98                              | 1.1                                           | 41.1                                                    | 175                                     | 3280                    |
| 201                                 | AMZ 0500LE10 _AM               |                            | 310                   | 94.0                                       | 13148                 | 0.93                              | 1.2                                           | 68                                                      | 175                                     | 5240                    |
| 274                                 | AMZ 0500LJ10 _AM               |                            | 414                   | 94.6                                       | 17923                 | 0.94                              | 1.2                                           | 90                                                      | 175                                     | 6020                    |
| 353                                 | AMZ 0500LN10 _AM               |                            | 532                   | 95.0                                       | 23090                 | 0.94                              | 1.2                                           | 113                                                     | 175                                     | 6800                    |
| 446                                 | AMZ 0500LR10 _AM               |                            | 680                   | 95.3                                       | 29173                 | 0.93                              | 1.2                                           | 135                                                     | 175                                     | 7580                    |
| 553                                 | AMZ 0560LQ10 _AM               |                            | 832                   | 95.6                                       | 36172                 | 0.94                              | 1.3                                           | 224                                                     | 175                                     | 10490                   |
| 662                                 | AMZ 0560LS10 _AM               |                            | 1000                  | 95.9                                       | 43302                 | 0.93                              | 1.4                                           | 265                                                     | 175                                     | 11480                   |
| 770                                 | AMZ 0560LU10 _AM               |                            | 1149                  | 95.9                                       | 50366                 | 0.94                              | 1.3                                           | 306                                                     | 175                                     | 12470                   |
| <b><math>n_n = 199</math> r/min</b> |                                |                            |                       |                                            |                       |                                   |                                               |                                                         |                                         |                         |
| 27                                  | M3_J 280SMB                    | 3G_J286220-_D_183706       | 45                    | 87.1                                       | 1292                  | 0.93                              | 1.0                                           | 2.2                                                     | 239                                     | 660                     |
| 42                                  | M3_J 315SMC                    | 3G_J316230-_D_183706       | 68                    | 88.7                                       | 1996                  | 0.93                              | 1.0                                           | 3.9                                                     | 239                                     | 890                     |
| 60                                  | M3_J 315MLA                    | 3G_J316410-_D_183706       | 95                    | 90.2                                       | 2854                  | 0.94                              | 1.0                                           | 5.8                                                     | 239                                     | 1125                    |
| 73                                  | M3_J 315LKB                    | 3G_J316820-_D_183706       | 115                   | 91.7                                       | 3502                  | 0.94                              | 1.1                                           | 7.8                                                     | 239                                     | 1430                    |
| 100                                 | M3_J 315LKC                    | 3G_J316830-_D_183706       | 159                   | 91.7                                       | 4788                  | 0.93                              | 1.1                                           | 9.8                                                     | 239                                     | 1605                    |
| 100                                 | M3_J 355SMB                    | 3G_J356220-_D_183706       | 151                   | 92.1                                       | 4775                  | 0.97                              | 1.2                                           | 17.1                                                    | 239                                     | 1780                    |
| 133                                 | M3_J 355MLB                    | 3G_J356420-_D_183706       | 201                   | 92.7                                       | 6363                  | 0.97                              | 1.2                                           | 22.4                                                    | 239                                     | 2210                    |
| 149                                 | M3_J 355LKB                    | 3G_J356820-_D_183706       | 229                   | 93.6                                       | 7151                  | 0.95                              | 1.3                                           | 28.5                                                    | 239                                     | 2690                    |
| 199                                 | M3_J 400LC                     | 3G_J406530-_D_183706       | 297                   | 93.9                                       | 9548                  | 0.97                              | 1.1                                           | 41.1                                                    | 239                                     | 3280                    |
| 275                                 | AMZ 0500LE10 _AM               |                            | 418                   | 95.2                                       | 13197                 | 0.93                              | 1.2                                           | 68                                                      | 239                                     | 5240                    |
| 382                                 | AMZ 0500LJ10 _AM               |                            | 576                   | 95.8                                       | 18332                 | 0.93                              | 1.2                                           | 90                                                      | 239                                     | 6020                    |
| 497                                 | AMZ 0500LN10 _AM               |                            | 751                   | 96.1                                       | 23851                 | 0.93                              | 1.2                                           | 113                                                     | 239                                     | 6800                    |
| 608                                 | AMZ 0500LR10 _AM               |                            | 922                   | 96.3                                       | 29178                 | 0.92                              | 1.3                                           | 135                                                     | 239                                     | 7580                    |
| 754                                 | AMZ 0560LQ10 _AM               |                            | 1130                  | 96.6                                       | 36184                 | 0.93                              | 1.4                                           | 224                                                     | 239                                     | 10490                   |
| 884                                 | AMZ 0560LS10 _AM               |                            | 1302                  | 96.6                                       | 42423                 | 0.95                              | 1.3                                           | 265                                                     | 239                                     | 11480                   |
| 1031                                | AMZ 0560LU10 _AM               |                            | 1517                  | 96.7                                       | 49478                 | 0.95                              | 1.3                                           | 306                                                     | 239                                     | 12470                   |
| <b><math>n_n = 253</math> r/min</b> |                                |                            |                       |                                            |                       |                                   |                                               |                                                         |                                         |                         |
| 35                                  | M3_J 280SMB                    | 3G_J286220-_D_183705       | 57                    | 89.1                                       | 1303                  | 0.92                              | 1.0                                           | 2.2                                                     | 304                                     | 660                     |
| 46                                  | M3_J 315SMC                    | 3G_J316230-_D_183705       | 74                    | 91.3                                       | 1742                  | 0.92                              | 1.1                                           | 3.9                                                     | 304                                     | 890                     |
| 72                                  | M3_J 315MLA                    | 3G_J316410-_D_183705       | 115                   | 92.1                                       | 2733                  | 0.93                              | 1.1                                           | 5.8                                                     | 304                                     | 1125                    |
| 92                                  | M3_J 315LKB                    | 3G_J316820-_D_183705       | 141                   | 92.6                                       | 3466                  | 0.95                              | 1.1                                           | 7.8                                                     | 304                                     | 1430                    |
| 115                                 | M3_J 315LKC                    | 3G_J316830-_D_183705       | 179                   | 93.4                                       | 4325                  | 0.93                              | 1.1                                           | 9.8                                                     | 304                                     | 1605                    |
| 126                                 | M3_J 355SMB                    | 3G_J356220-_D_183705       | 191                   | 93.2                                       | 4750                  | 0.96                              | 1.2                                           | 17.1                                                    | 304                                     | 1780                    |
| 172                                 | M3_J 355MLB                    | 3G_J356420-_D_183705       | 261                   | 93.5                                       | 6484                  | 0.96                              | 1.2                                           | 22.4                                                    | 304                                     | 2210                    |
| 200                                 | M3_J 355LKB                    | 3G_J356820-_D_183705       | 300                   | 93.9                                       | 7530                  | 0.96                              | 1.2                                           | 28.5                                                    | 304                                     | 2690                    |
| 252                                 | M3_J 400LC                     | 3G_J406530-_D_183705       | 371                   | 94.7                                       | 9495                  | 0.97                              | 1.1                                           | 41.1                                                    | 304                                     | 3280                    |
| 351                                 | AMZ 0500LE10 _AM               |                            | 532                   | 96.1                                       | 13249                 | 0.93                              | 1.3                                           | 68                                                      | 304                                     | 5240                    |
| 493                                 | AMZ 0500LJ10 _AM               |                            | 746                   | 96.5                                       | 18609                 | 0.92                              | 1.3                                           | 90                                                      | 304                                     | 6020                    |
| 705                                 | AMZ 0500LQ10 _AM               |                            | 1064                  | 96.8                                       | 26612                 | 0.92                              | 1.3                                           | 124                                                     | 304                                     | 7190                    |
| 865                                 | AMZ 0560LN10 _AM               |                            | 1295                  | 97.0                                       | 32651                 | 0.93                              | 1.4                                           | 203                                                     | 304                                     | 10000                   |
| 1031                                | AMZ 0560LR10 _AM               |                            | 1514                  | 97.1                                       | 38917                 | 0.95                              | 1.3                                           | 245                                                     | 304                                     | 10990                   |
| 1237                                | AMZ 0560LT10 _AM               |                            | 1826                  | 97.2                                       | 46693                 | 0.94                              | 1.4                                           | 286                                                     | 304                                     | 11980                   |

<sup>1)</sup> See ordering information - section for details on motor type and product code, variant code 183 used only with air cooled, IC416 motors

<sup>2)</sup> Separate cooling fan power not considered in efficiency value

<sup>3)</sup> Output values and more base speeds for IEC 500 and 560 sizes on request

<sup>4)</sup>  $T_{max}/T_N$  value represents maximum short time overloadability with inverter supply. This does not represent the pull-out torque value according to IEC.

# Permanent magnet synchronous motors

## 460 V Technical data

IC 416: Separate cooling or liquid cooled motors

Suitable for constant torque 0 -  $n_n$ , constant power  $n_n$  -  $n_{max}$

Network voltage 460 V, at motor terminals 426 V

| Output<br>kW                        | Type designation <sup>1)</sup> | Product code <sup>1)</sup> | Current<br>$I_N$<br>A | Efficiency<br>Full load <sup>2)</sup><br>% | Torque<br>$T_N$<br>Nm | Power<br>factor<br>$\cos \varphi$ | Torque<br>$\frac{T_{max}}{T_N}$ <sup>4)</sup> | Moment<br>of inertia<br>$J=1/4GD^2$<br>kgm <sup>2</sup> | Maximum<br>speed,<br>$n_{max}$<br>r/min | Weight<br>approx.<br>kg |
|-------------------------------------|--------------------------------|----------------------------|-----------------------|--------------------------------------------|-----------------------|-----------------------------------|-----------------------------------------------|---------------------------------------------------------|-----------------------------------------|-------------------------|
| <b><math>n_n = 286</math> r/min</b> |                                |                            |                       |                                            |                       |                                   |                                               |                                                         |                                         |                         |
| 37                                  | M3_J 280SMB                    | 3G_J286220-_D_183707       | 59                    | 90.6                                       | 1222                  | 0.93                              | 1.0                                           | 2.2                                                     | 343                                     | 660                     |
| 53                                  | M3_J 315SMC                    | 3G_J316230-_D_183707       | 83                    | 91.9                                       | 1777                  | 0.95                              | 1.1                                           | 3.9                                                     | 343                                     | 890                     |
| 83                                  | M3_J 315MLA                    | 3G_J316410-_D_183707       | 130                   | 92.9                                       | 2775                  | 0.93                              | 1.1                                           | 5.8                                                     | 343                                     | 1125                    |
| 100                                 | M3_J 315LKB                    | 3G_J316820-_D_183707       | 153                   | 93.8                                       | 3331                  | 0.94                              | 1.2                                           | 7.8                                                     | 343                                     | 1430                    |
| 133                                 | M3_J 315LKC                    | 3G_J316830-_D_183707       | 204                   | 93.8                                       | 4441                  | 0.94                              | 1.1                                           | 9.8                                                     | 343                                     | 1605                    |
| 133                                 | M3_J 355SMB                    | 3G_J356220-_D_183707       | 196                   | 93.7                                       | 4441                  | 0.98                              | 1.2                                           | 17.1                                                    | 343                                     | 1780                    |
| 186                                 | M3_J 355MLB                    | 3G_J356420-_D_183707       | 283                   | 94.6                                       | 6207                  | 0.94                              | 1.3                                           | 22.4                                                    | 343                                     | 2210                    |
| 222                                 | M3_J 355LKB                    | 3G_J356820-_D_183707       | 329                   | 94.8                                       | 7430                  | 0.97                              | 1.3                                           | 28.5                                                    | 343                                     | 2690                    |
| 282                                 | M3_J 400LC                     | 3G_J406530-_D_183707       | 435                   | 95.5                                       | 9427                  | 0.92                              | 1.3                                           | 41.1                                                    | 343                                     | 3280                    |
| 383                                 | AMZ 0500LE10 _AM               |                            | 570                   | 96.3                                       | 12789                 | 0.94                              | 1.2                                           | 68                                                      | 343                                     | 5240                    |
| 553                                 | AMZ 0500LJ10 _AM               |                            | 830                   | 96.7                                       | 18466                 | 0.93                              | 1.3                                           | 90                                                      | 343                                     | 6020                    |
| 712                                 | AMZ 0500LN10 _AM               |                            | 1067                  | 96.9                                       | 23775                 | 0.93                              | 1.3                                           | 113                                                     | 343                                     | 6800                    |
| 869                                 | AMZ 0560LL10 _AM               |                            | 1295                  | 97.1                                       | 29017                 | 0.93                              | 1.4                                           | 183                                                     | 343                                     | 9500                    |
| 1193                                | AMZ 0560LR10 _AM               |                            | 1809                  | 97.3                                       | 39836                 | 0.93                              | 1.4                                           | 245                                                     | 343                                     | 10990                   |
| 1520                                | AMZ 0560LU10 _AM               |                            | 2263                  | 97.5                                       | 50755                 | 0.93                              | 1.4                                           | 306                                                     | 343                                     | 12470                   |
| <b><math>n_n = 345</math> r/min</b> |                                |                            |                       |                                            |                       |                                   |                                               |                                                         |                                         |                         |
| 47                                  | M3_J 280SMB                    | 3G_J286220-_D_183706       | 77                    | 91.5                                       | 1303                  | 0.91                              | 1.0                                           | 2.2                                                     | 414                                     | 660                     |
| 72                                  | M3_J 315SMC                    | 3G_J316230-_D_183706       | 115                   | 92.5                                       | 2002                  | 0.92                              | 1.0                                           | 3.9                                                     | 414                                     | 890                     |
| 103                                 | M3_J 315MLA                    | 3G_J316410-_D_183706       | 160                   | 93.5                                       | 2850                  | 0.94                              | 1.0                                           | 5.8                                                     | 414                                     | 1125                    |
| 125                                 | M3_J 315LKB                    | 3G_J316820-_D_183706       | 194                   | 94.3                                       | 3457                  | 0.93                              | 1.1                                           | 7.8                                                     | 414                                     | 1430                    |
| 171                                 | M3_J 315LKC                    | 3G_J316830-_D_183706       | 267                   | 94.3                                       | 4735                  | 0.92                              | 1.1                                           | 9.8                                                     | 414                                     | 1605                    |
| 171                                 | M3_J 355SMB                    | 3G_J356220-_D_183706       | 255                   | 94.5                                       | 4729                  | 0.96                              | 1.2                                           | 17.1                                                    | 414                                     | 1780                    |
| 227                                 | M3_J 355MLB                    | 3G_J356420-_D_183706       | 339                   | 94.9                                       | 6295                  | 0.96                              | 1.2                                           | 22.4                                                    | 414                                     | 2210                    |
| 252                                 | M3_J 355LKB                    | 3G_J356820-_D_183706       | 382                   | 95.3                                       | 6976                  | 0.94                              | 1.3                                           | 28.5                                                    | 414                                     | 2690                    |
| 342                                 | M3_J 400LC                     | 3G_J406530-_D_183706       | 501                   | 95.7                                       | 9454                  | 0.97                              | 1.1                                           | 41.1                                                    | 414                                     | 3280                    |
| 553                                 | AMZ 0500LG10 _AM               |                            | 819                   | 97.0                                       | 15308                 | 0.94                              | 1.3                                           | 79                                                      | 414                                     | 5630                    |
| 829                                 | AMZ 0500LN10 _AM               |                            | 1223                  | 97.3                                       | 22948                 | 0.94                              | 1.3                                           | 113                                                     | 414                                     | 6800                    |
| 1029                                | AMZ 0560LL10 _AM               |                            | 1513                  | 97.4                                       | 28484                 | 0.94                              | 1.4                                           | 183                                                     | 414                                     | 9500                    |
| 1543                                | AMZ 0560LS10 _AM               |                            | 2264                  | 97.6                                       | 42712                 | 0.94                              | 1.4                                           | 265                                                     | 414                                     | 11480                   |
| <b><math>n_n = 398</math> r/min</b> |                                |                            |                       |                                            |                       |                                   |                                               |                                                         |                                         |                         |
| 53                                  | M3_J 280SMB                    | 3G_J286220-_D_183708       | 86                    | 92.5                                       | 1274                  | 0.90                              | 1.0                                           | 2.2                                                     | 478                                     | 660                     |
| 73                                  | M3_J 315SMC                    | 3G_J316230-_D_183708       | 113                   | 93.8                                       | 1750                  | 0.93                              | 1.1                                           | 3.9                                                     | 478                                     | 890                     |
| 106                                 | M3_J 315MLA                    | 3G_J316410-_D_183708       | 160                   | 94.3                                       | 2546                  | 0.95                              | 1.1                                           | 5.8                                                     | 478                                     | 1125                    |
| 133                                 | M3_J 315LKB                    | 3G_J316820-_D_183708       | 205                   | 95.1                                       | 3179                  | 0.92                              | 1.3                                           | 7.8                                                     | 478                                     | 1430                    |
| 180                                 | M3_J 315LKC                    | 3G_J316830-_D_183708       | 276                   | 94.8                                       | 4314                  | 0.94                              | 1.1                                           | 9.8                                                     | 478                                     | 1605                    |
| 183                                 | M3_J 355SMB                    | 3G_J356220-_D_183708       | 278                   | 95.2                                       | 4386                  | 0.95                              | 1.3                                           | 17.1                                                    | 478                                     | 1780                    |
| 249                                 | M3_J 355MLB                    | 3G_J356420-_D_183708       | 370                   | 95.6                                       | 5965                  | 0.96                              | 1.3                                           | 22.4                                                    | 478                                     | 2210                    |
| 282                                 | M3_J 355LKB                    | 3G_J356820-_D_183708       | 404                   | 95.6                                       | 6766                  | 0.99                              | 1.3                                           | 28.5                                                    | 478                                     | 2690                    |
| 372                                 | M3_J 400LC                     | 3G_J406530-_D_183708       | 541                   | 96.3                                       | 8906                  | 0.97                              | 1.2                                           | 41.1                                                    | 478                                     | 3280                    |
| 552                                 | AMZ 0500LE10 _AM               |                            | 829                   | 97.0                                       | 13245                 | 0.92                              | 1.3                                           | 68                                                      | 478                                     | 5240                    |
| 992                                 | AMZ 0500LN10 _AM               |                            | 1484                  | 97.5                                       | 23803                 | 0.92                              | 1.3                                           | 113                                                     | 478                                     | 6800                    |
| 1213                                | AMZ 0500LR10 _AM               |                            | 1839                  | 97.6                                       | 29105                 | 0.92                              | 1.3                                           | 135                                                     | 478                                     | 7580                    |
| 1504                                | AMZ 0560LQ10 _AM               |                            | 2253                  | 97.7                                       | 36088                 | 0.93                              | 1.4                                           | 224                                                     | 478                                     | 10490                   |
| 1730                                | AMZ 0560LU10 _AM               |                            | 2472                  | 98.0                                       | 41511                 | 0.96                              | 1.6                                           | 306                                                     | 478                                     | 12470                   |

<sup>1)</sup> See ordering information - section for details on motor type and product code, variant code 183 used only with air cooled, IC416 motors

<sup>2)</sup> Separate cooling fan power not considered in efficiency value

<sup>3)</sup> Output values and more base speeds for IEC 500 and 560 sizes on request

<sup>4)</sup>  $T_{max}/T_N$  value represents maximum short time overloadability with inverter supply. This does not represent the pull-out torque value according to IEC.

# Permanent magnet synchronous motors

## 460 V Technical data

IC 416: Separate cooling or liquid cooled motors

Suitable for constant torque 0 -  $n_n$ , constant power  $n_n$  -  $n_{max}$

Network voltage 460 V, at motor terminals 426 V

| Output<br>kW                        | Type designation <sup>1)</sup> | Product code <sup>1)</sup> | Current<br>$I_N$<br>A | Efficiency<br>Full load <sup>2)</sup><br>% | Torque<br>$T_N$<br>Nm | Power<br>factor<br>$\cos \varphi$ | Torque<br>$\frac{T_{max}}{T_N}$ <sup>4)</sup> | Moment<br>of inertia<br>$J=1/4GD^2$<br>kgm <sup>2</sup> | Maximum<br>speed,<br>$n_{max}$<br>r/min | Weight<br>approx.<br>kg |
|-------------------------------------|--------------------------------|----------------------------|-----------------------|--------------------------------------------|-----------------------|-----------------------------------|-----------------------------------------------|---------------------------------------------------------|-----------------------------------------|-------------------------|
| <b><math>n_n = 495</math> r/min</b> |                                |                            |                       |                                            |                       |                                   |                                               |                                                         |                                         |                         |
| 63                                  | M3_J 280SMB                    | 3G_J286220-_D_183707       | 100                   | 93.4                                       | 1211                  | 0.92                              | 1.0                                           | 2.2                                                     | 594                                     | 660                     |
| 91                                  | M3_J 315SMC                    | 3G_J316230-_D_183707       | 139                   | 94.3                                       | 1753                  | 0.94                              | 1.1                                           | 3.9                                                     | 594                                     | 890                     |
| 142                                 | M3_J 315MLA                    | 3G_J316410-_D_183707       | 219                   | 95.0                                       | 2732                  | 0.93                              | 1.1                                           | 5.8                                                     | 594                                     | 1125                    |
| 169                                 | M3_J 315LKB                    | 3G_J316820-_D_183707       | 257                   | 95.4                                       | 3259                  | 0.94                              | 1.2                                           | 7.8                                                     | 594                                     | 1430                    |
| 225                                 | M3_J 315LKC                    | 3G_J316830-_D_183707       | 341                   | 95.4                                       | 4338                  | 0.94                              | 1.1                                           | 9.8                                                     | 594                                     | 1605                    |
| 225                                 | M3_J 355SMB                    | 3G_J356220-_D_183707       | 325                   | 95.4                                       | 4338                  | 0.98                              | 1.2                                           | 17.1                                                    | 594                                     | 1780                    |
| 312                                 | M3_J 355MLB                    | 3G_J356420-_D_183707       | 472                   | 95.9                                       | 6029                  | 0.94                              | 1.3                                           | 22.4                                                    | 594                                     | 2210                    |
| 372                                 | M3_J 355LKB                    | 3G_J356820-_D_183707       | 545                   | 96.0                                       | 7174                  | 0.96                              | 1.3                                           | 28.5                                                    | 594                                     | 2690                    |
| 466                                 | M3_J 400LC                     | 3G_J406530-_D_183707       | 716                   | 96.6                                       | 8997                  | 0.92                              | 1.3                                           | 41.1                                                    | 594                                     | 3280                    |
| 683                                 | AMZ 0500LE10 _AM               |                            | 1048                  | 97.4                                       | 13177                 | 0.92                              | 1.3                                           | 68                                                      | 594                                     | 5240                    |
| 955                                 | AMZ 0500LJ10 _AM               |                            | 1464                  | 97.6                                       | 18425                 | 0.92                              | 1.3                                           | 90                                                      | 594                                     | 6020                    |
| 1227                                | AMZ 0500LN10 _AM               |                            | 1834                  | 97.7                                       | 23672                 | 0.92                              | 1.3                                           | 113                                                     | 594                                     | 6800                    |
| 1488                                | AMZ 0560LL10 _AM               |                            | 2240                  | 97.8                                       | 28708                 | 0.93                              | 1.4                                           | 183                                                     | 594                                     | 9500                    |
| 1730                                | AMZ 0560LR10 _AM               |                            | 2495                  | 98.0                                       | 33377                 | 0.95                              | 1.6                                           | 245                                                     | 594                                     | 10990                   |
| <b><math>n_n = 690</math> r/min</b> |                                |                            |                       |                                            |                       |                                   |                                               |                                                         |                                         |                         |
| 90                                  | M3_J 280SMB                    | 3G_J286220-_D_183708       | 145                   | 94.6                                       | 1248                  | 0.90                              | 1.1                                           | 2.2                                                     | 828                                     | 660                     |
| 123                                 | M3_J 315SMC                    | 3G_J316230-_D_183708       | 188                   | 95.3                                       | 1699                  | 0.93                              | 1.2                                           | 3.9                                                     | 828                                     | 890                     |
| 179                                 | M3_J 315MLA                    | 3G_J316410-_D_183708       | 267                   | 95.7                                       | 2478                  | 0.95                              | 1.1                                           | 5.8                                                     | 828                                     | 1125                    |
| 221                                 | M3_J 315LKB                    | 3G_J316820-_D_183708       | 340                   | 96.0                                       | 3052                  | 0.92                              | 1.3                                           | 7.8                                                     | 828                                     | 1430                    |
| 277                                 | M3_J 315LKC                    | 3G_J316830-_D_183708       | 409                   | 96.1                                       | 3826                  | 0.96                              | 1.2                                           | 9.8                                                     | 828                                     | 1605                    |
| 272                                 | M3_J 355SMB                    | 3G_J356220-_D_183708       | 402                   | 96.1                                       | 3769                  | 0.96                              | 1.5                                           | 17.1                                                    | 828                                     | 1780                    |
| 414                                 | M3_J 355MLB                    | 3G_J356420-_D_183708       | 610                   | 96.4                                       | 5724                  | 0.95                              | 1.4                                           | 22.4                                                    | 828                                     | 2210                    |
| 468                                 | M3_J 355LKB                    | 3G_J356820-_D_183708       | 664                   | 96.4                                       | 6479                  | 0.99                              | 1.3                                           | 28.5                                                    | 828                                     | 2690                    |
| 623                                 | M3_J 400LC                     | 3G_J406530-_D_183708       | 900                   | 97.0                                       | 8615                  | 0.97                              | 1.3                                           | 41.1                                                    | 828                                     | 3280                    |
| <sup>3)</sup>                       | AMZ 0500L_10 _AM               |                            |                       |                                            |                       |                                   |                                               |                                                         |                                         |                         |
| <sup>3)</sup>                       | AMZ 0560L_10 _AM               |                            |                       |                                            |                       |                                   |                                               |                                                         |                                         |                         |

<sup>1)</sup> See ordering information - section for details on motor type and product code, variant code 183 used only with air cooled, IC416 motors

<sup>2)</sup> Separate cooling fan power not considered in efficiency value

<sup>3)</sup> Output values and more base speeds for IEC 500 and 560 sizes on request

<sup>4)</sup>  $T_{max}/T_N$  value represents maximum short time overloadability with inverter supply. This does not represent the pull-out torque value according to IEC.

# Permanent magnet synchronous motors

## 500 V Technical data

IC 416: Separate cooling or liquid cooled motors

Suitable for constant torque 0 -  $n_n$ , constant power  $n_n$  -  $n_{max}$

Network voltage 500 V, at motor terminals 463 V

| Output<br>kW                        | Type designation <sup>1)</sup> | Product code <sup>1)</sup> | Current<br>$I_N$<br>A | Efficiency<br>Full load <sup>2)</sup><br>% | Torque<br>$T_N$<br>Nm | Power<br>factor<br>$\cos \varphi$ | Torque<br>$\frac{T_{max}}{T_N}$ <sup>4)</sup> | Moment<br>of inertia<br>$J=1/4GD^2$<br>kgm <sup>2</sup> | Maximum<br>speed,<br>$n_{max}$<br>r/min | Weight<br>approx.<br>kg |
|-------------------------------------|--------------------------------|----------------------------|-----------------------|--------------------------------------------|-----------------------|-----------------------------------|-----------------------------------------------|---------------------------------------------------------|-----------------------------------------|-------------------------|
| <b><math>n_n = 159</math> r/min</b> |                                |                            |                       |                                            |                       |                                   |                                               |                                                         |                                         |                         |
| 21                                  | M3_J 280SMB                    | 3G_J286220-_D_183705       | 34                    | 84.3                                       | 1287                  | 0.93                              | 1.0                                           | 2.2                                                     | 191                                     | 660                     |
| 29                                  | M3_J 315SMC                    | 3G_J316230-_D_183705       | 44                    | 87.9                                       | 1742                  | 0.94                              | 1.1                                           | 3.9                                                     | 191                                     | 890                     |
| 45                                  | M3_J 315MLA                    | 3G_J316410-_D_183705       | 68                    | 88.8                                       | 2730                  | 0.94                              | 1.1                                           | 5.8                                                     | 191                                     | 1125                    |
| 58                                  | M3_J 315LKB                    | 3G_J316820-_D_183705       | 84                    | 89.6                                       | 3463                  | 0.96                              | 1.1                                           | 7.8                                                     | 191                                     | 1430                    |
| 72                                  | M3_J 315LKC                    | 3G_J316830-_D_183705       | 106                   | 90.8                                       | 4352                  | 0.94                              | 1.1                                           | 9.8                                                     | 191                                     | 1605                    |
| 79                                  | M3_J 355SMB                    | 3G_J356220-_D_183705       | 113                   | 90.5                                       | 4775                  | 0.97                              | 1.2                                           | 17.1                                                    | 191                                     | 1780                    |
| 108                                 | M3_J 355MLB                    | 3G_J356420-_D_183705       | 154                   | 90.9                                       | 6510                  | 0.96                              | 1.2                                           | 22.4                                                    | 191                                     | 2210                    |
| 126                                 | M3_J 355LKB                    | 3G_J356820-_D_183705       | 178                   | 91.6                                       | 7596                  | 0.97                              | 1.2                                           | 28.5                                                    | 191                                     | 2690                    |
| 159                                 | M3_J 400LC                     | 3G_J406530-_D_183705       | 220                   | 92.5                                       | 9550                  | 0.97                              | 1.1                                           | 41.1                                                    | 191                                     | 3280                    |
| 219                                 | AMZ 0500LE10 _AM               |                            | 310                   | 94.4                                       | 13154                 | 0.93                              | 1.2                                           | 68                                                      | 191                                     | 5240                    |
| 299                                 | AMZ 0500LJ10 _AM               |                            | 415                   | 94.9                                       | 17959                 | 0.94                              | 1.2                                           | 90                                                      | 191                                     | 6020                    |
| 385                                 | AMZ 0500LN10 _AM               |                            | 533                   | 95.3                                       | 23124                 | 0.94                              | 1.2                                           | 113                                                     | 191                                     | 6800                    |
| 486                                 | AMZ 0500LR10 _AM               |                            | 680                   | 95.6                                       | 29191                 | 0.93                              | 1.2                                           | 135                                                     | 191                                     | 7580                    |
| 602                                 | AMZ 0560LQ10 _AM               |                            | 831                   | 95.9                                       | 36158                 | 0.94                              | 1.3                                           | 224                                                     | 191                                     | 10490                   |
| 721                                 | AMZ 0560LS10 _AM               |                            | 1000                  | 96.1                                       | 43305                 | 0.93                              | 1.4                                           | 265                                                     | 191                                     | 11480                   |
| 839                                 | AMZ 0560LU10 _AM               |                            | 1149                  | 96.1                                       | 50393                 | 0.94                              | 1.3                                           | 306                                                     | 191                                     | 12470                   |
| <b><math>n_n = 217</math> r/min</b> |                                |                            |                       |                                            |                       |                                   |                                               |                                                         |                                         |                         |
| 29                                  | M3_J 280SMB                    | 3G_J286220-_D_183706       | 45                    | 87.8                                       | 1299                  | 0.92                              | 1.0                                           | 2.2                                                     | 260                                     | 660                     |
| 45                                  | M3_J 315SMC                    | 3G_J316230-_D_183706       | 68                    | 89.4                                       | 2004                  | 0.93                              | 1.0                                           | 3.9                                                     | 260                                     | 890                     |
| 65                                  | M3_J 315MLA                    | 3G_J316410-_D_183706       | 95                    | 90.8                                       | 2864                  | 0.94                              | 1.0                                           | 5.8                                                     | 260                                     | 1125                    |
| 79                                  | M3_J 315LKB                    | 3G_J316820-_D_183706       | 115                   | 92.2                                       | 3501                  | 0.94                              | 1.1                                           | 7.8                                                     | 260                                     | 1430                    |
| 109                                 | M3_J 315LKC                    | 3G_J316830-_D_183706       | 158                   | 92.1                                       | 4787                  | 0.93                              | 1.1                                           | 9.8                                                     | 260                                     | 1605                    |
| 108                                 | M3_J 355SMB                    | 3G_J356220-_D_183706       | 151                   | 92.6                                       | 4774                  | 0.97                              | 1.2                                           | 17.1                                                    | 260                                     | 1780                    |
| 144                                 | M3_J 355MLB                    | 3G_J356420-_D_183706       | 201                   | 93.2                                       | 6361                  | 0.96                              | 1.2                                           | 22.4                                                    | 260                                     | 2210                    |
| 162                                 | M3_J 355LKB                    | 3G_J356820-_D_183706       | 228                   | 93.9                                       | 7150                  | 0.95                              | 1.3                                           | 28.5                                                    | 260                                     | 2690                    |
| 217                                 | M3_J 400LC                     | 3G_J406530-_D_183706       | 296                   | 94.3                                       | 9547                  | 0.97                              | 1.1                                           | 41.1                                                    | 260                                     | 3280                    |
| 299                                 | AMZ 0500LE10 _AM               |                            | 417                   | 95.5                                       | 13159                 | 0.93                              | 1.2                                           | 68                                                      | 260                                     | 5240                    |
| 416                                 | AMZ 0500LJ10 _AM               |                            | 576                   | 96.0                                       | 18308                 | 0.93                              | 1.2                                           | 90                                                      | 260                                     | 6020                    |
| 541                                 | AMZ 0500LN10 _AM               |                            | 750                   | 96.3                                       | 23809                 | 0.93                              | 1.2                                           | 113                                                     | 260                                     | 6800                    |
| 665                                 | AMZ 0500LR10 _AM               |                            | 927                   | 96.5                                       | 29266                 | 0.92                              | 1.3                                           | 135                                                     | 260                                     | 7580                    |
| 825                                 | AMZ 0560LQ10 _AM               |                            | 1135                  | 96.7                                       | 36308                 | 0.93                              | 1.4                                           | 224                                                     | 260                                     | 10490                   |
| 961                                 | AMZ 0560LS10 _AM               |                            | 1299                  | 96.8                                       | 42293                 | 0.95                              | 1.3                                           | 265                                                     | 260                                     | 11480                   |
| 1121                                | AMZ 0560LU10 _AM               |                            | 1514                  | 96.9                                       | 49334                 | 0.95                              | 1.3                                           | 306                                                     | 260                                     | 12470                   |
| <b><math>n_n = 275</math> r/min</b> |                                |                            |                       |                                            |                       |                                   |                                               |                                                         |                                         |                         |
| 38                                  | M3_J 280SMB                    | 3G_J286220-_D_183705       | 57                    | 89.7                                       | 1303                  | 0.91                              | 1.0                                           | 2.2                                                     | 330                                     | 660                     |
| 50                                  | M3_J 315SMC                    | 3G_J316230-_D_183705       | 74                    | 91.9                                       | 1729                  | 0.92                              | 1.1                                           | 3.9                                                     | 330                                     | 890                     |
| 78                                  | M3_J 315MLA                    | 3G_J316410-_D_183705       | 113                   | 92.7                                       | 2715                  | 0.93                              | 1.1                                           | 5.8                                                     | 330                                     | 1125                    |
| 99                                  | M3_J 315LKB                    | 3G_J316820-_D_183705       | 140                   | 93.1                                       | 3442                  | 0.95                              | 1.1                                           | 7.8                                                     | 330                                     | 1430                    |
| 123                                 | M3_J 315LKC                    | 3G_J316830-_D_183705       | 177                   | 93.8                                       | 4280                  | 0.93                              | 1.2                                           | 9.8                                                     | 330                                     | 1605                    |
| 136                                 | M3_J 355SMB                    | 3G_J356220-_D_183705       | 188                   | 93.5                                       | 4707                  | 0.96                              | 1.2                                           | 17.1                                                    | 330                                     | 1780                    |
| 185                                 | M3_J 355MLB                    | 3G_J356420-_D_183705       | 257                   | 93.9                                       | 6422                  | 0.96                              | 1.2                                           | 22.4                                                    | 330                                     | 2210                    |
| 215                                 | M3_J 355LKB                    | 3G_J356820-_D_183705       | 295                   | 94.2                                       | 7449                  | 0.96                              | 1.2                                           | 28.5                                                    | 330                                     | 2690                    |
| 271                                 | M3_J 400LC                     | 3G_J406530-_D_183705       | 366                   | 95.0                                       | 9404                  | 0.97                              | 1.1                                           | 41.1                                                    | 330                                     | 3280                    |
| 381                                 | AMZ 0500LE10 _AM               |                            | 531                   | 96.3                                       | 13231                 | 0.93                              | 1.3                                           | 68                                                      | 330                                     | 5240                    |
| 601                                 | AMZ 0500LL10 _AM               |                            | 826                   | 96.8                                       | 20871                 | 0.93                              | 1.3                                           | 101                                                     | 330                                     | 6410                    |
| 765                                 | AMZ 0500LQ10 _AM               |                            | 1060                  | 96.9                                       | 26566                 | 0.92                              | 1.3                                           | 124                                                     | 330                                     | 7190                    |
| 1119                                | AMZ 0560LR10 _AM               |                            | 1510                  | 97.3                                       | 38860                 | 0.94                              | 1.3                                           | 245                                                     | 330                                     | 10990                   |
| 1344                                | AMZ 0560LT10 _AM               |                            | 1824                  | 97.3                                       | 46673                 | 0.94                              | 1.4                                           | 286                                                     | 330                                     | 11980                   |

<sup>1)</sup> See ordering information - section for details on motor type and product code, variant code 183 used only with air cooled, IC416 motors

<sup>2)</sup> Separate cooling fan power not considered in efficiency value

<sup>3)</sup> Output values and more base speeds for IEC 500 and 560 sizes on request

<sup>4)</sup>  $\frac{T_{max}}{T_N}$  value represents maximum short time overloadability with inverter supply. This does not represent the pull-out torque value according to IEC.

# Permanent magnet synchronous motors

## 500 V Technical data

IC 416: Separate cooling or liquid cooled motors

Suitable for constant torque 0 -  $n_n$ , constant power  $n_n$  -  $n_{max}$

Network voltage 500 V, at motor terminals 463 V

| Output<br>kW                        | Type designation <sup>1)</sup> | Product code <sup>1)</sup> | Current<br>$I_N$<br>A | Efficiency<br>Full load <sup>2)</sup><br>% | Torque<br>$T_N$<br>Nm | Power<br>factor<br>$\cos \varphi$ | Torque<br>$\frac{T_{max}}{T_N}$ <sup>4)</sup> | Moment<br>of inertia<br>$J=1/4GD^2$<br>kgm <sup>2</sup> | Maximum<br>speed,<br>$n_{max}$<br>r/min | Weight<br>approx.<br>kg |
|-------------------------------------|--------------------------------|----------------------------|-----------------------|--------------------------------------------|-----------------------|-----------------------------------|-----------------------------------------------|---------------------------------------------------------|-----------------------------------------|-------------------------|
| <b><math>n_n = 310</math> r/min</b> |                                |                            |                       |                                            |                       |                                   |                                               |                                                         |                                         |                         |
| 40                                  | M3_J 280SMB                    | 3G_J286220-_D_183707       | 59                    | 91.1                                       | 1222                  | 0.92                              | 1.0                                           | 2.2                                                     | 372                                     | 660                     |
| 58                                  | M3_J 315SMC                    | 3G_J316230-_D_183707       | 83                    | 92.3                                       | 1777                  | 0.95                              | 1.1                                           | 3.9                                                     | 372                                     | 890                     |
| 90                                  | M3_J 315MLA                    | 3G_J316410-_D_183707       | 130                   | 93.3                                       | 2775                  | 0.93                              | 1.1                                           | 5.8                                                     | 372                                     | 1125                    |
| 108                                 | M3_J 315LKB                    | 3G_J316820-_D_183707       | 153                   | 94.1                                       | 3330                  | 0.94                              | 1.2                                           | 7.8                                                     | 372                                     | 1430                    |
| 144                                 | M3_J 315LKC                    | 3G_J316830-_D_183707       | 204                   | 94.1                                       | 4440                  | 0.94                              | 1.1                                           | 9.8                                                     | 372                                     | 1605                    |
| 144                                 | M3_J 355SMB                    | 3G_J356220-_D_183707       | 195                   | 94.1                                       | 4440                  | 0.98                              | 1.2                                           | 17.1                                                    | 372                                     | 1780                    |
| 202                                 | M3_J 355MLB                    | 3G_J356420-_D_183707       | 282                   | 94.9                                       | 6206                  | 0.94                              | 1.3                                           | 22.4                                                    | 372                                     | 2210                    |
| 241                                 | M3_J 355LKB                    | 3G_J356820-_D_183707       | 329                   | 95.1                                       | 7429                  | 0.96                              | 1.3                                           | 28.5                                                    | 372                                     | 2690                    |
| 306                                 | M3_J 400LC                     | 3G_J406530-_D_183707       | 435                   | 95.7                                       | 9427                  | 0.92                              | 1.3                                           | 41.1                                                    | 372                                     | 3280                    |
| 416                                 | AMZ 0500LE10 _AM               |                            | 570                   | 96.5                                       | 12815                 | 0.94                              | 1.2                                           | 68                                                      | 372                                     | 5240                    |
| 602                                 | AMZ 0500LJ10 _AM               |                            | 832                   | 96.9                                       | 18545                 | 0.93                              | 1.3                                           | 90                                                      | 372                                     | 6020                    |
| 774                                 | AMZ 0500LN10 _AM               |                            | 1068                  | 97.1                                       | 23844                 | 0.93                              | 1.3                                           | 113                                                     | 372                                     | 6800                    |
| 941                                 | AMZ 0560LL10 _AM               |                            | 1293                  | 97.3                                       | 28989                 | 0.93                              | 1.4                                           | 183                                                     | 372                                     | 9500                    |
| 1293                                | AMZ 0560LR10 _AM               |                            | 1809                  | 97.5                                       | 39833                 | 0.93                              | 1.4                                           | 245                                                     | 372                                     | 10990                   |
| 1647                                | AMZ 0560LU10 _AM               |                            | 2263                  | 97.6                                       | 50738                 | 0.93                              | 1.4                                           | 306                                                     | 372                                     | 12470                   |
| <b><math>n_n = 375</math> r/min</b> |                                |                            |                       |                                            |                       |                                   |                                               |                                                         |                                         |                         |
| 51                                  | M3_J 280SMB                    | 3G_J286220-_D_183706       | 77                    | 91.9                                       | 1303                  | 0.91                              | 1.0                                           | 2.2                                                     | 450                                     | 660                     |
| 78                                  | M3_J 315SMC                    | 3G_J316230-_D_183706       | 114                   | 92.9                                       | 1987                  | 0.92                              | 1.0                                           | 3.9                                                     | 450                                     | 890                     |
| 111                                 | M3_J 315MLA                    | 3G_J316410-_D_183706       | 158                   | 93.7                                       | 2825                  | 0.94                              | 1.0                                           | 5.8                                                     | 450                                     | 1125                    |
| 134                                 | M3_J 315LKB                    | 3G_J316820-_D_183706       | 190                   | 94.6                                       | 3409                  | 0.93                              | 1.2                                           | 7.8                                                     | 450                                     | 1430                    |
| 184                                 | M3_J 315LKC                    | 3G_J316830-_D_183706       | 263                   | 94.5                                       | 4676                  | 0.92                              | 1.1                                           | 9.8                                                     | 450                                     | 1605                    |
| 183                                 | M3_J 355SMB                    | 3G_J356220-_D_183706       | 250                   | 94.7                                       | 4664                  | 0.96                              | 1.2                                           | 17.1                                                    | 450                                     | 1780                    |
| 243                                 | M3_J 355MLB                    | 3G_J356420-_D_183706       | 333                   | 95.1                                       | 6197                  | 0.96                              | 1.2                                           | 22.4                                                    | 450                                     | 2210                    |
| 268                                 | M3_J 355LKB                    | 3G_J356820-_D_183706       | 373                   | 95.4                                       | 6826                  | 0.94                              | 1.4                                           | 28.5                                                    | 450                                     | 2690                    |
| 366                                 | M3_J 400LC                     | 3G_J406530-_D_183706       | 491                   | 95.9                                       | 9309                  | 0.97                              | 1.2                                           | 41.1                                                    | 450                                     | 3280                    |
| 520                                 | AMZ 0500LE10 _AM               |                            | 737                   | 97.0                                       | 13243                 | 0.92                              | 1.3                                           | 68                                                      | 450                                     | 5240                    |
| 900                                 | AMZ 0500LN10 _AM               |                            | 1221                  | 97.4                                       | 22920                 | 0.94                              | 1.3                                           | 113                                                     | 450                                     | 6800                    |
| 1116                                | AMZ 0560LL10 _AM               |                            | 1508                  | 97.5                                       | 28421                 | 0.94                              | 1.4                                           | 183                                                     | 450                                     | 9500                    |
| 1673                                | AMZ 0560LS10 _AM               |                            | 2256                  | 97.7                                       | 42606                 | 0.94                              | 1.4                                           | 265                                                     | 450                                     | 11480                   |
| <b><math>n_n = 433</math> r/min</b> |                                |                            |                       |                                            |                       |                                   |                                               |                                                         |                                         |                         |
| 58                                  | M3_J 280SMB                    | 3G_J286220-_D_183708       | 86                    | 92.9                                       | 1274                  | 0.90                              | 1.0                                           | 2.2                                                     | 520                                     | 660                     |
| 79                                  | M3_J 315SMC                    | 3G_J316230-_D_183708       | 113                   | 94.2                                       | 1750                  | 0.93                              | 1.1                                           | 3.9                                                     | 520                                     | 890                     |
| 116                                 | M3_J 315MLA                    | 3G_J316410-_D_183708       | 160                   | 94.7                                       | 2546                  | 0.95                              | 1.1                                           | 5.8                                                     | 520                                     | 1125                    |
| 144                                 | M3_J 315LKB                    | 3G_J316820-_D_183708       | 205                   | 95.3                                       | 3179                  | 0.92                              | 1.3                                           | 7.8                                                     | 520                                     | 1430                    |
| 196                                 | M3_J 315LKC                    | 3G_J316830-_D_183708       | 273                   | 95.1                                       | 4322                  | 0.94                              | 1.1                                           | 9.8                                                     | 520                                     | 1605                    |
| 200                                 | M3_J 355SMB                    | 3G_J356220-_D_183708       | 275                   | 95.4                                       | 4415                  | 0.95                              | 1.3                                           | 17.1                                                    | 520                                     | 1780                    |
| 270                                 | M3_J 355MLB                    | 3G_J356420-_D_183708       | 369                   | 95.7                                       | 5964                  | 0.96                              | 1.3                                           | 22.4                                                    | 520                                     | 2210                    |
| 307                                 | M3_J 355LKB                    | 3G_J356820-_D_183708       | 404                   | 95.8                                       | 6765                  | 0.99                              | 1.3                                           | 28.5                                                    | 520                                     | 2690                    |
| 404                                 | M3_J 400LC                     | 3G_J406530-_D_183708       | 541                   | 96.4                                       | 8906                  | 0.97                              | 1.2                                           | 41.1                                                    | 520                                     | 3280                    |
| 599                                 | AMZ 0500LE10 _AM               |                            | 827                   | 97.2                                       | 13211                 | 0.92                              | 1.3                                           | 68                                                      | 520                                     | 5240                    |
| 1077                                | AMZ 0500LN10 _AM               |                            | 1481                  | 97.6                                       | 23754                 | 0.92                              | 1.3                                           | 113                                                     | 520                                     | 6800                    |
| 1316                                | AMZ 0500LR10 _AM               |                            | 1833                  | 97.6                                       | 29025                 | 0.92                              | 1.3                                           | 135                                                     | 520                                     | 7580                    |
| 1631                                | AMZ 0560LQ10 _AM               |                            | 2245                  | 97.8                                       | 35972                 | 0.93                              | 1.4                                           | 224                                                     | 520                                     | 10490                   |
| 1881                                | AMZ 0560LU10 _AM               |                            | 2471                  | 98.0                                       | 41486                 | 0.96                              | 1.6                                           | 306                                                     | 520                                     | 12470                   |

<sup>1)</sup> See ordering information - section for details on motor type and product code, variant code 183 used only with air cooled, IC 416 motors

<sup>2)</sup> Separate cooling fan power not considered in efficiency value

<sup>3)</sup> Output values and more base speeds for IEC 500 and 560 sizes on request

<sup>4)</sup>  $T_{max}/T_N$  value represents maximum short time overloadability with inverter supply. This does not represent the pull-out torque value according to IEC.

# Permanent magnet synchronous motors

## 500 V Technical data

IC 416: Separate cooling or liquid cooled motors

Suitable for constant torque 0 -  $n_n$ , constant power  $n_n$  -  $n_{max}$

Network voltage 500 V, at motor terminals 463 V

| Output<br>kW                        | Type designation <sup>1)</sup> | Product code <sup>1)</sup> | Current<br>$I_N$<br>A | Efficiency<br>Full load <sup>2)</sup><br>% | Torque<br>$T_N$<br>Nm | Power<br>factor<br>$\cos \varphi$ | Torque<br>$\frac{T_{max}}{T_N}$ <sup>4)</sup> | Moment<br>of inertia<br>$J=1/4GD^2$<br>kgm <sup>2</sup> | Maximum<br>speed,<br>$n_{max}$<br>r/min | Weight<br>approx.<br>kg |
|-------------------------------------|--------------------------------|----------------------------|-----------------------|--------------------------------------------|-----------------------|-----------------------------------|-----------------------------------------------|---------------------------------------------------------|-----------------------------------------|-------------------------|
| <b><math>n_n = 538</math> r/min</b> |                                |                            |                       |                                            |                       |                                   |                                               |                                                         |                                         |                         |
| 67                                  | M3_J 280SMB                    | 3G_J286220-_D_183707       | 98                    | 93.7                                       | 1196                  | 0.92                              | 1.1                                           | 2.2                                                     | 646                                     | 660                     |
| 97                                  | M3_J 315SMC                    | 3G_J316230-_D_183707       | 136                   | 94.6                                       | 1727                  | 0.94                              | 1.1                                           | 3.9                                                     | 646                                     | 890                     |
| 151                                 | M3_J 315MLA                    | 3G_J316410-_D_183707       | 214                   | 95.2                                       | 2684                  | 0.93                              | 1.1                                           | 5.8                                                     | 646                                     | 1125                    |
| 179                                 | M3_J 315LKB                    | 3G_J316820-_D_183707       | 250                   | 95.5                                       | 3185                  | 0.94                              | 1.2                                           | 7.8                                                     | 646                                     | 1430                    |
| 239                                 | M3_J 315LKC                    | 3G_J316830-_D_183707       | 333                   | 95.6                                       | 4245                  | 0.94                              | 1.2                                           | 9.8                                                     | 646                                     | 1605                    |
| 239                                 | M3_J 355SMB                    | 3G_J356220-_D_183707       | 318                   | 95.6                                       | 4247                  | 0.98                              | 1.3                                           | 17.1                                                    | 646                                     | 1780                    |
| 330                                 | M3_J 355MLB                    | 3G_J356420-_D_183707       | 458                   | 96.0                                       | 5858                  | 0.94                              | 1.4                                           | 22.4                                                    | 646                                     | 2210                    |
| 392                                 | M3_J 355LKB                    | 3G_J356820-_D_183707       | 528                   | 96.1                                       | 6961                  | 0.96                              | 1.4                                           | 28.5                                                    | 646                                     | 2690                    |
| 491                                 | M3_J 400LC                     | 3G_J406530-_D_183707       | 693                   | 96.7                                       | 8727                  | 0.92                              | 1.4                                           | 41.1                                                    | 646                                     | 3280                    |
| 741                                 | AMZ 0500LE10 _AM               |                            | 1046                  | 97.4                                       | 13153                 | 0.92                              | 1.3                                           | 68                                                      | 646                                     | 5240                    |
| 1035                                | AMZ 0500LJ10 _AM               |                            | 1459                  | 97.6                                       | 18372                 | 0.92                              | 1.3                                           | 90                                                      | 646                                     | 6020                    |
| 1330                                | AMZ 0500LN10 _AM               |                            | 1828                  | 97.8                                       | 23609                 | 0.92                              | 1.3                                           | 113                                                     | 646                                     | 6800                    |
| 1612                                | AMZ 0560LL10 _AM               |                            | 2233                  | 97.9                                       | 28614                 | 0.93                              | 1.4                                           | 183                                                     | 646                                     | 9500                    |
| 1881                                | AMZ 0560LR10 _AM               |                            | 2496                  | 98.1                                       | 33389                 | 0.95                              | 1.6                                           | 245                                                     | 646                                     | 10990                   |
| <b><math>n_n = 750</math> r/min</b> |                                |                            |                       |                                            |                       |                                   |                                               |                                                         |                                         |                         |
| 96                                  | M3_J 280SMB                    | 3G_J286220-_D_183708       | 141                   | 94.7                                       | 1223                  | 0.90                              | 1.1                                           | 2.2                                                     | 863                                     | 660                     |
| 130                                 | M3_J 315SMC                    | 3G_J316230-_D_183708       | 183                   | 95.5                                       | 1655                  | 0.93                              | 1.2                                           | 3.9                                                     | 863                                     | 890                     |
| 189                                 | M3_J 315MLA                    | 3G_J316410-_D_183708       | 259                   | 95.8                                       | 2411                  | 0.95                              | 1.2                                           | 5.8                                                     | 863                                     | 1125                    |
| 230                                 | M3_J 315LKB                    | 3G_J316820-_D_183708       | 326                   | 96.0                                       | 2931                  | 0.92                              | 1.4                                           | 7.8                                                     | 863                                     | 1430                    |
| 290                                 | M3_J 315LKC                    | 3G_J316830-_D_183708       | 393                   | 96.1                                       | 3689                  | 0.96                              | 1.3                                           | 9.8                                                     | 863                                     | 1605                    |
| 282                                 | M3_J 355SMB                    | 3G_J356220-_D_183708       | 383                   | 96.2                                       | 3595                  | 0.96                              | 1.6                                           | 17.1                                                    | 863                                     | 1780                    |
| 432                                 | M3_J 355MLB                    | 3G_J356420-_D_183708       | 585                   | 96.4                                       | 5494                  | 0.96                              | 1.4                                           | 22.4                                                    | 863                                     | 2210                    |
| 488                                 | M3_J 355LKB                    | 3G_J356820-_D_183708       | 636                   | 96.4                                       | 6211                  | 0.99                              | 1.4                                           | 28.5                                                    | 863                                     | 2690                    |
| 651                                 | M3_J 400LC                     | 3G_J406530-_D_183708       | 863                   | 97.1                                       | 8288                  | 0.97                              | 1.3                                           | 41.1                                                    | 863                                     | 3280                    |
| <sup>3)</sup>                       | AMZ 0500L_10 _AM               |                            |                       |                                            |                       |                                   |                                               |                                                         |                                         |                         |
| <sup>3)</sup>                       | AMZ 0560L_10 _AM               |                            |                       |                                            |                       |                                   |                                               |                                                         |                                         |                         |

- <sup>1)</sup> See ordering information - section for details on motor type and product code, variant code 183 used only with air cooled, IC 416 motors  
<sup>2)</sup> Separate cooling fan power not considered in efficiency value

- <sup>3)</sup> Output values and more base speeds for IEC 500 and 560 sizes on request  
<sup>4)</sup>  $T_{max}/T_N$  value represents maximum short time overloadability with inverter supply. This does not represent the pull-out torque value according to IEC.

# Permanent magnet synchronous motors

## 575 V Technical data

IC 416: Separate cooling or liquid cooled motors

Suitable for constant torque 0 -  $n_n$ , constant power  $n_n$  -  $n_{max}$

Network voltage 575 V, at motor terminals 532 V

| Output<br>kW                        | Type designation <sup>1)</sup> | Product code <sup>1)</sup> | Current<br>$I_N$<br>A | Efficiency<br>Full load <sup>2)</sup><br>% | Torque<br>$T_N$<br>Nm | Power<br>factor<br>$\cos \varphi$ | Torque<br>$\frac{T_{max}}{T_N}$ <sup>4)</sup> | Moment<br>of inertia<br>$J=1/4GD^2$<br>kgm <sup>2</sup> | Maximum<br>speed,<br>$n_{max}$<br>r/min | Weight<br>approx.<br>kg |
|-------------------------------------|--------------------------------|----------------------------|-----------------------|--------------------------------------------|-----------------------|-----------------------------------|-----------------------------------------------|---------------------------------------------------------|-----------------------------------------|-------------------------|
| <b><math>n_n = 183</math> r/min</b> |                                |                            |                       |                                            |                       |                                   |                                               |                                                         |                                         |                         |
| 25                                  | M3_J 280SMB                    | 3G_J286220-_D_183705       | 34                    | 85.9                                       | 1302                  | 0.93                              | 1.0                                           | 2.2                                                     | 220                                     | 660                     |
| 33                                  | M3_J 315SMC                    | 3G_J316230-_D_183705       | 44                    | 89.0                                       | 1744                  | 0.93                              | 1.1                                           | 3.9                                                     | 220                                     | 890                     |
| 52                                  | M3_J 315MLA                    | 3G_J316410-_D_183705       | 67                    | 90.0                                       | 2735                  | 0.94                              | 1.1                                           | 5.8                                                     | 220                                     | 1125                    |
| 66                                  | M3_J 315LKB                    | 3G_J316820-_D_183705       | 83                    | 90.7                                       | 3473                  | 0.96                              | 1.1                                           | 7.8                                                     | 220                                     | 1430                    |
| 83                                  | M3_J 315LKC                    | 3G_J316830-_D_183705       | 105                   | 91.7                                       | 4351                  | 0.94                              | 1.1                                           | 9.8                                                     | 220                                     | 1605                    |
| 91                                  | M3_J 355SMB                    | 3G_J356220-_D_183705       | 112                   | 91.5                                       | 4771                  | 0.97                              | 1.2                                           | 17.1                                                    | 220                                     | 1780                    |
| 124                                 | M3_J 355MLB                    | 3G_J356420-_D_183705       | 153                   | 91.9                                       | 6505                  | 0.96                              | 1.2                                           | 22.4                                                    | 220                                     | 2210                    |
| 145                                 | M3_J 355LKB                    | 3G_J356820-_D_183705       | 177                   | 92.5                                       | 7592                  | 0.97                              | 1.2                                           | 28.5                                                    | 220                                     | 2690                    |
| 183                                 | M3_J 400LC                     | 3G_J406530-_D_183705       | 218                   | 93.3                                       | 9548                  | 0.97                              | 1.1                                           | 41.1                                                    | 220                                     | 3280                    |
| 253                                 | AMZ 0500LE10 _AM               |                            | 310                   | 95.0                                       | 13203                 | 0.93                              | 1.2                                           | 68                                                      | 220                                     | 5240                    |
| 344                                 | AMZ 0500LJ10 _AM               |                            | 414                   | 95.5                                       | 17952                 | 0.94                              | 1.2                                           | 90                                                      | 220                                     | 6020                    |
| 443                                 | AMZ 0500LN10 _AM               |                            | 531                   | 95.8                                       | 23118                 | 0.94                              | 1.2                                           | 113                                                     | 220                                     | 6800                    |
| 560                                 | AMZ 0500LR10 _AM               |                            | 680                   | 96.0                                       | 29224                 | 0.93                              | 1.3                                           | 135                                                     | 220                                     | 7580                    |
| 694                                 | AMZ 0560LQ10 _AM               |                            | 831                   | 96.3                                       | 36217                 | 0.94                              | 1.3                                           | 224                                                     | 220                                     | 10490                   |
| 833                                 | AMZ 0560LS10 _AM               |                            | 1005                  | 96.5                                       | 43471                 | 0.93                              | 1.4                                           | 265                                                     | 220                                     | 11480                   |
| 964                                 | AMZ 0560LU10 _AM               |                            | 1146                  | 96.5                                       | 50307                 | 0.94                              | 1.3                                           | 306                                                     | 220                                     | 12470                   |
| <b><math>n_n = 249</math> r/min</b> |                                |                            |                       |                                            |                       |                                   |                                               |                                                         |                                         |                         |
| 34                                  | M3_J 280SMB                    | 3G_J286220-_D_183706       | 45                    | 89.2                                       | 1303                  | 0.92                              | 1.0                                           | 2.2                                                     | 299                                     | 660                     |
| 52                                  | M3_J 315SMC                    | 3G_J316230-_D_183706       | 68                    | 90.5                                       | 2006                  | 0.93                              | 1.0                                           | 3.9                                                     | 299                                     | 890                     |
| 75                                  | M3_J 315MLA                    | 3G_J316410-_D_183706       | 94                    | 91.8                                       | 2864                  | 0.94                              | 1.0                                           | 5.8                                                     | 299                                     | 1125                    |
| 91                                  | M3_J 315LKB                    | 3G_J316820-_D_183706       | 114                   | 93.0                                       | 3500                  | 0.93                              | 1.1                                           | 7.8                                                     | 299                                     | 1430                    |
| 125                                 | M3_J 315LKC                    | 3G_J316830-_D_183706       | 157                   | 92.9                                       | 4786                  | 0.93                              | 1.1                                           | 9.8                                                     | 299                                     | 1605                    |
| 124                                 | M3_J 355SMB                    | 3G_J356220-_D_183706       | 150                   | 93.3                                       | 4771                  | 0.97                              | 1.2                                           | 17.1                                                    | 299                                     | 1780                    |
| 166                                 | M3_J 355MLB                    | 3G_J356420-_D_183706       | 200                   | 93.8                                       | 6359                  | 0.96                              | 1.2                                           | 22.4                                                    | 299                                     | 2210                    |
| 186                                 | M3_J 355LKB                    | 3G_J356820-_D_183706       | 227                   | 94.4                                       | 7147                  | 0.94                              | 1.3                                           | 28.5                                                    | 299                                     | 2690                    |
| 249                                 | M3_J 400LC                     | 3G_J406530-_D_183706       | 295                   | 94.8                                       | 9545                  | 0.97                              | 1.1                                           | 41.1                                                    | 299                                     | 3280                    |
| 345                                 | AMZ 0500LE10 _AM               |                            | 418                   | 96.0                                       | 13232                 | 0.93                              | 1.2                                           | 68                                                      | 299                                     | 5240                    |
| 478                                 | AMZ 0500LJ10 _AM               |                            | 575                   | 96.4                                       | 18333                 | 0.93                              | 1.2                                           | 90                                                      | 299                                     | 6020                    |
| 622                                 | AMZ 0500LN10 _AM               |                            | 749                   | 96.6                                       | 23856                 | 0.93                              | 1.3                                           | 113                                                     | 299                                     | 6800                    |
| 762                                 | AMZ 0500LR10 _AM               |                            | 923                   | 96.8                                       | 29225                 | 0.92                              | 1.3                                           | 135                                                     | 299                                     | 7580                    |
| 945                                 | AMZ 0560LQ10 _AM               |                            | 1132                  | 97.0                                       | 36244                 | 0.93                              | 1.4                                           | 224                                                     | 299                                     | 10490                   |
| 1104                                | AMZ 0560LS10 _AM               |                            | 1297                  | 97.1                                       | 42342                 | 0.95                              | 1.3                                           | 265                                                     | 299                                     | 11480                   |
| 1288                                | AMZ 0560LU10 _AM               |                            | 1512                  | 97.2                                       | 49399                 | 0.95                              | 1.3                                           | 306                                                     | 299                                     | 12470                   |
| <b><math>n_n = 316</math> r/min</b> |                                |                            |                       |                                            |                       |                                   |                                               |                                                         |                                         |                         |
| 43                                  | M3_J 280SMB                    | 3G_J286220-_D_183705       | 57                    | 90.9                                       | 1303                  | 0.91                              | 1.0                                           | 2.2                                                     | 379                                     | 660                     |
| 56                                  | M3_J 315SMC                    | 3G_J316230-_D_183705       | 72                    | 92.6                                       | 1702                  | 0.92                              | 1.2                                           | 3.9                                                     | 379                                     | 890                     |
| 89                                  | M3_J 315MLA                    | 3G_J316410-_D_183705       | 111                   | 93.3                                       | 2674                  | 0.93                              | 1.1                                           | 5.8                                                     | 379                                     | 1125                    |
| 112                                 | M3_J 315LKB                    | 3G_J316820-_D_183705       | 137                   | 93.7                                       | 3388                  | 0.95                              | 1.1                                           | 7.8                                                     | 379                                     | 1430                    |
| 139                                 | M3_J 315LKC                    | 3G_J316830-_D_183705       | 172                   | 94.3                                       | 4187                  | 0.93                              | 1.2                                           | 9.8                                                     | 379                                     | 1605                    |
| 153                                 | M3_J 355SMB                    | 3G_J356220-_D_183705       | 184                   | 94.1                                       | 4615                  | 0.96                              | 1.2                                           | 17.1                                                    | 379                                     | 1780                    |
| 208                                 | M3_J 355MLB                    | 3G_J356420-_D_183705       | 251                   | 94.4                                       | 6293                  | 0.96                              | 1.2                                           | 22.4                                                    | 379                                     | 2210                    |
| 241                                 | M3_J 355LKB                    | 3G_J356820-_D_183705       | 287                   | 94.7                                       | 7281                  | 0.96                              | 1.2                                           | 28.5                                                    | 379                                     | 2690                    |
| 305                                 | M3_J 400LC                     | 3G_J406530-_D_183705       | 357                   | 95.4                                       | 9215                  | 0.97                              | 1.1                                           | 41.1                                                    | 379                                     | 3280                    |
| 439                                 | AMZ 0500LE10 _AM               |                            | 531                   | 96.6                                       | 13267                 | 0.92                              | 1.3                                           | 68                                                      | 379                                     | 5240                    |
| 615                                 | AMZ 0500LJ10 _AM               |                            | 742                   | 96.9                                       | 18586                 | 0.92                              | 1.3                                           | 90                                                      | 379                                     | 6020                    |
| 778                                 | AMZ 0500LN10 _AM               |                            | 929                   | 97.1                                       | 23512                 | 0.93                              | 1.3                                           | 113                                                     | 379                                     | 6800                    |
| 1078                                | AMZ 0560LN10 _AM               |                            | 1292                  | 97.4                                       | 32579                 | 0.93                              | 1.4                                           | 203                                                     | 379                                     | 10000                   |
| 1286                                | AMZ 0560LR10 _AM               |                            | 1508                  | 97.5                                       | 38865                 | 0.94                              | 1.4                                           | 245                                                     | 379                                     | 10990                   |
| 1543                                | AMZ 0560LT10 _AM               |                            | 1819                  | 97.5                                       | 46632                 | 0.94                              | 1.4                                           | 286                                                     | 379                                     | 11980                   |

<sup>1)</sup> See ordering information - section for details on motor type and product code, variant code 183 used only with air cooled, IC 416 motors

<sup>2)</sup> Separate cooling fan power not considered in efficiency value

<sup>3)</sup> Output values and more base speeds for IEC 500 and 560 sizes on request

<sup>4)</sup>  $T_{max}/T_N$  value represents maximum short time overloadability with inverter supply. This does not represent the pull-out torque value according to IEC.

# Permanent magnet synchronous motors

## 575 V Technical data

IC 416: Separate cooling or liquid cooled motors

Suitable for constant torque 0 -  $n_n$ , constant power  $n_n$  -  $n_{max}$

Network voltage 575 V, at motor terminals 532 V

| Output<br>kW                        | Type designation <sup>1)</sup> | Product code <sup>1)</sup> | Current<br>$I_N$<br>A | Efficiency<br>Full load <sup>2)</sup><br>% | Torque<br>$T_N$<br>Nm | Power<br>factor<br>$\cos \varphi$ | Torque<br>$\frac{T_{max}}{T_N}$ <sup>4)</sup> | Moment<br>of inertia<br>$J=1/4GD^2$<br>kgm <sup>2</sup> | Maximum<br>speed,<br>$n_{max}$<br>r/min | Weight<br>approx.<br>kg |
|-------------------------------------|--------------------------------|----------------------------|-----------------------|--------------------------------------------|-----------------------|-----------------------------------|-----------------------------------------------|---------------------------------------------------------|-----------------------------------------|-------------------------|
| <b><math>n_n = 357</math> r/min</b> |                                |                            |                       |                                            |                       |                                   |                                               |                                                         |                                         |                         |
| 46                                  | M3_J 280SMB                    | 3G_J286220-_D_183707       | 59                    | 92.0                                       | 1222                  | 0.92                              | 1.0                                           | 2.2                                                     | 428                                     | 660                     |
| 66                                  | M3_J 315SMC                    | 3G_J316230-_D_183707       | 82                    | 93.1                                       | 1776                  | 0.94                              | 1.1                                           | 3.9                                                     | 428                                     | 890                     |
| 104                                 | M3_J 315MLA                    | 3G_J316410-_D_183707       | 129                   | 93.8                                       | 2775                  | 0.93                              | 1.1                                           | 5.8                                                     | 428                                     | 1125                    |
| 124                                 | M3_J 315LKB                    | 3G_J316820-_D_183707       | 153                   | 94.5                                       | 3330                  | 0.94                              | 1.2                                           | 7.8                                                     | 428                                     | 1430                    |
| 166                                 | M3_J 315LKC                    | 3G_J316830-_D_183707       | 203                   | 94.6                                       | 4440                  | 0.94                              | 1.1                                           | 9.8                                                     | 428                                     | 1605                    |
| 166                                 | M3_J 355SMB                    | 3G_J356220-_D_183707       | 194                   | 94.5                                       | 4439                  | 0.98                              | 1.2                                           | 17.1                                                    | 428                                     | 1780                    |
| 232                                 | M3_J 355MLB                    | 3G_J356420-_D_183707       | 282                   | 95.2                                       | 6205                  | 0.94                              | 1.3                                           | 22.4                                                    | 428                                     | 2210                    |
| 278                                 | M3_J 355LKB                    | 3G_J356820-_D_183707       | 328                   | 95.4                                       | 7427                  | 0.96                              | 1.3                                           | 28.5                                                    | 428                                     | 2690                    |
| 352                                 | M3_J 400LC                     | 3G_J406530-_D_183707       | 434                   | 96.0                                       | 9426                  | 0.92                              | 1.3                                           | 41.1                                                    | 428                                     | 3280                    |
| 478                                 | AMZ 0500LE10 _AM               |                            | 568                   | 96.8                                       | 12787                 | 0.94                              | 1.2                                           | 68                                                      | 428                                     | 5240                    |
| 690                                 | AMZ 0500LJ10 _AM               |                            | 827                   | 97.1                                       | 18458                 | 0.93                              | 1.3                                           | 90                                                      | 428                                     | 6020                    |
| 887                                 | AMZ 0500LN10 _AM               |                            | 1062                  | 97.3                                       | 23728                 | 0.93                              | 1.3                                           | 113                                                     | 428                                     | 6800                    |
| 1080                                | AMZ 0560LL10 _AM               |                            | 1289                  | 97.5                                       | 28891                 | 0.93                              | 1.4                                           | 183                                                     | 428                                     | 9500                    |
| 1486                                | AMZ 0560LR10 _AM               |                            | 1805                  | 97.6                                       | 39752                 | 0.93                              | 1.4                                           | 245                                                     | 428                                     | 10990                   |
| 1889                                | AMZ 0560LU10 _AM               |                            | 2253                  | 97.7                                       | 50532                 | 0.93                              | 1.4                                           | 306                                                     | 428                                     | 12470                   |
| <b><math>n_n = 431</math> r/min</b> |                                |                            |                       |                                            |                       |                                   |                                               |                                                         |                                         |                         |
| 58                                  | M3_J 280SMB                    | 3G_J286220-_D_183706       | 75                    | 92.6                                       | 1279                  | 0.91                              | 1.0                                           | 2.2                                                     | 517                                     | 660                     |
| 88                                  | M3_J 315SMC                    | 3G_J316230-_D_183706       | 112                   | 93.5                                       | 1956                  | 0.92                              | 1.0                                           | 3.9                                                     | 517                                     | 890                     |
| 125                                 | M3_J 315MLA                    | 3G_J316410-_D_183706       | 154                   | 94.3                                       | 2771                  | 0.94                              | 1.1                                           | 5.8                                                     | 517                                     | 1125                    |
| 150                                 | M3_J 315LKB                    | 3G_J316820-_D_183706       | 184                   | 94.9                                       | 3310                  | 0.93                              | 1.2                                           | 7.8                                                     | 517                                     | 1430                    |
| 206                                 | M3_J 315LKC                    | 3G_J316830-_D_183706       | 255                   | 95.0                                       | 4555                  | 0.92                              | 1.1                                           | 9.8                                                     | 517                                     | 1605                    |
| 205                                 | M3_J 355SMB                    | 3G_J356220-_D_183706       | 242                   | 95.1                                       | 4529                  | 0.97                              | 1.3                                           | 17.1                                                    | 517                                     | 1780                    |
| 271                                 | M3_J 355MLB                    | 3G_J356420-_D_183706       | 321                   | 95.5                                       | 5998                  | 0.96                              | 1.3                                           | 22.4                                                    | 517                                     | 2210                    |
| 295                                 | M3_J 355LKB                    | 3G_J356820-_D_183706       | 356                   | 95.7                                       | 6524                  | 0.94                              | 1.4                                           | 28.5                                                    | 517                                     | 2690                    |
| 407                                 | M3_J 400LC                     | 3G_J406530-_D_183706       | 474                   | 96.2                                       | 9019                  | 0.97                              | 1.2                                           | 41.1                                                    | 517                                     | 3280                    |
| 597                                 | AMZ 0500LE10 _AM               |                            | 737                   | 97.2                                       | 13228                 | 0.92                              | 1.3                                           | 68                                                      | 517                                     | 5240                    |
| 1032                                | AMZ 0500LN10 _AM               |                            | 1216                  | 97.6                                       | 22867                 | 0.94                              | 1.3                                           | 113                                                     | 517                                     | 6800                    |
| 1280                                | AMZ 0560LL10 _AM               |                            | 1503                  | 97.7                                       | 28362                 | 0.94                              | 1.4                                           | 183                                                     | 517                                     | 9500                    |
| 1917                                | AMZ 0560LS10 _AM               |                            | 2247                  | 97.9                                       | 42476                 | 0.94                              | 1.4                                           | 265                                                     | 517                                     | 11480                   |
| <b><math>n_n = 498</math> r/min</b> |                                |                            |                       |                                            |                       |                                   |                                               |                                                         |                                         |                         |
| 66                                  | M3_J 280SMB                    | 3G_J286220-_D_183708       | 86                    | 93.5                                       | 1274                  | 0.90                              | 1.0                                           | 2.2                                                     | 598                                     | 660                     |
| 91                                  | M3_J 315SMC                    | 3G_J316230-_D_183708       | 113                   | 94.5                                       | 1750                  | 0.93                              | 1.1                                           | 3.9                                                     | 598                                     | 890                     |
| 133                                 | M3_J 315MLA                    | 3G_J316410-_D_183708       | 160                   | 95.1                                       | 2546                  | 0.95                              | 1.1                                           | 5.8                                                     | 598                                     | 1125                    |
| 166                                 | M3_J 315LKB                    | 3G_J316820-_D_183708       | 205                   | 95.6                                       | 3179                  | 0.92                              | 1.3                                           | 7.8                                                     | 598                                     | 1430                    |
| 207                                 | M3_J 315LKC                    | 3G_J316830-_D_183708       | 247                   | 95.6                                       | 3976                  | 0.95                              | 1.2                                           | 9.8                                                     | 598                                     | 1605                    |
| 207                                 | M3_J 355SMB                    | 3G_J356220-_D_183708       | 245                   | 95.8                                       | 3972                  | 0.96                              | 1.4                                           | 17.1                                                    | 598                                     | 1780                    |
| 311                                 | M3_J 355MLB                    | 3G_J356420-_D_183708       | 369                   | 96.0                                       | 5963                  | 0.95                              | 1.3                                           | 22.4                                                    | 598                                     | 2210                    |
| 353                                 | M3_J 355LKB                    | 3G_J356820-_D_183708       | 403                   | 96.0                                       | 6764                  | 0.99                              | 1.3                                           | 28.5                                                    | 598                                     | 2690                    |
| 464                                 | M3_J 400LC                     | 3G_J406530-_D_183708       | 540                   | 96.7                                       | 8905                  | 0.97                              | 1.2                                           | 41.1                                                    | 598                                     | 3280                    |
| 687                                 | AMZ 0500LE10 _AM               |                            | 824                   | 97.3                                       | 13174                 | 0.92                              | 1.3                                           | 68                                                      | 598                                     | 5240                    |
| 1233                                | AMZ 0500LN10 _AM               |                            | 1473                  | 97.7                                       | 23645                 | 0.92                              | 1.3                                           | 113                                                     | 598                                     | 6800                    |
| 1506                                | AMZ 0500LR10 _AM               |                            | 1823                  | 97.8                                       | 28880                 | 0.92                              | 1.3                                           | 135                                                     | 598                                     | 7580                    |
| 1868                                | AMZ 0560LQ10 _AM               |                            | 2236                  | 97.9                                       | 35822                 | 0.93                              | 1.4                                           | 224                                                     | 598                                     | 10490                   |
| 2163                                | AMZ 0560LU10 _AM               |                            | 2472                  | 98.1                                       | 41479                 | 0.96                              | 1.6                                           | 306                                                     | 598                                     | 12470                   |

<sup>1)</sup> See ordering information - section for details on motor type and product code, variant code 183 used only with air cooled, IC 416 motors

<sup>2)</sup> Separate cooling fan power not considered in efficiency value

<sup>3)</sup> Output values and more base speeds for IEC 500 and 560 sizes on request

<sup>4)</sup>  $T_{max}/T_N$  value represents maximum short time overloadability with inverter supply. This does not represent the pull-out torque value according to IEC.

# Permanent magnet synchronous motors

## 575 V Technical data

IC 416: Separate cooling or liquid cooled motors

Suitable for constant torque 0 -  $n_n$ , constant power  $n_n$  -  $n_{max}$

Network voltage 575 V, at motor terminals 532 V

| Output<br>kW                        | Type designation <sup>1)</sup> | Product code <sup>1)</sup> | Current<br>$I_N$<br>A | Efficiency<br>Full load <sup>2)</sup><br>% | Torque<br>$T_N$<br>Nm | Power<br>factor<br>cos $\varphi$ | Torque<br>$\frac{T_{max}}{T_N}$ <sup>4)</sup> | Moment<br>of inertia<br>$J=1/4GD^2$<br>kgm <sup>2</sup> | Maximum<br>speed,<br>$n_{max}$<br>r/min | Weight<br>approx.<br>kg |
|-------------------------------------|--------------------------------|----------------------------|-----------------------|--------------------------------------------|-----------------------|----------------------------------|-----------------------------------------------|---------------------------------------------------------|-----------------------------------------|-------------------------|
| <b><math>n_n = 618</math> r/min</b> |                                |                            |                       |                                            |                       |                                  |                                               |                                                         |                                         |                         |
| 75                                  | M3_J 280SMB                    | 3G_J286220-_D_183707       | 95                    | 94.2                                       | 1164                  | 0.92                             | 1.1                                           | 2.2                                                     | 742                                     | 660                     |
| 108                                 | M3_J 315SMC                    | 3G_J316230-_D_183707       | 131                   | 95.0                                       | 1674                  | 0.94                             | 1.2                                           | 3.9                                                     | 742                                     | 890                     |
| 167                                 | M3_J 315MLA                    | 3G_J316410-_D_183707       | 205                   | 95.4                                       | 2586                  | 0.93                             | 1.2                                           | 5.8                                                     | 742                                     | 1125                    |
| 196                                 | M3_J 315LKB                    | 3G_J316820-_D_183707       | 237                   | 95.7                                       | 3033                  | 0.94                             | 1.3                                           | 7.8                                                     | 742                                     | 1430                    |
| 263                                 | M3_J 315LKC                    | 3G_J316830-_D_183707       | 316                   | 95.8                                       | 4056                  | 0.94                             | 1.2                                           | 9.8                                                     | 742                                     | 1605                    |
| 263                                 | M3_J 355SMB                    | 3G_J356220-_D_183707       | 302                   | 95.8                                       | 4062                  | 0.99                             | 1.3                                           | 17.1                                                    | 742                                     | 1780                    |
| 357                                 | M3_J 355MLB                    | 3G_J356420-_D_183707       | 431                   | 96.2                                       | 5517                  | 0.94                             | 1.5                                           | 22.4                                                    | 742                                     | 2210                    |
| 423                                 | M3_J 355LKB                    | 3G_J356820-_D_183707       | 494                   | 96.3                                       | 6536                  | 0.97                             | 1.5                                           | 28.5                                                    | 742                                     | 2690                    |
| 531                                 | M3_J 400LC                     | 3G_J406530-_D_183707       | 651                   | 96.8                                       | 8196                  | 0.91                             | 1.5                                           | 41.1                                                    | 742                                     | 3280                    |
| 847                                 | AMZ 0500LE10 _AM               |                            | 1040                  | 97.6                                       | 13089                 | 0.92                             | 1.3                                           | 68                                                      | 742                                     | 5240                    |
| 1181                                | AMZ 0500LJ10 _AM               |                            | 1449                  | 97.7                                       | 18250                 | 0.92                             | 1.3                                           | 90                                                      | 742                                     | 6020                    |
| 1518                                | AMZ 0500LN10 _AM               |                            | 1813                  | 97.8                                       | 23458                 | 0.92                             | 1.3                                           | 113                                                     | 742                                     | 6800                    |
| 1840                                | AMZ 0560LL10 _AM               |                            | 2218                  | 98.0                                       | 28434                 | 0.93                             | 1.4                                           | 183                                                     | 742                                     | 9500                    |
| 2162                                | AMZ 0560LR10 _AM               |                            | 2497                  | 98.1                                       | 33410                 | 0.95                             | 1.6                                           | 245                                                     | 742                                     | 10990                   |
| <b><math>n_n = 863</math> r/min</b> |                                |                            |                       |                                            |                       |                                  |                                               |                                                         |                                         |                         |
| 106                                 | M3_J 280SMB                    | 3G_J286220-_D_183708       | 134                   | 95.0                                       | 1171                  | 0.90                             | 1.1                                           | 2.2                                                     | 863                                     | 660                     |
| 142                                 | M3_J 315SMC                    | 3G_J316230-_D_183708       | 172                   | 95.7                                       | 1566                  | 0.93                             | 1.3                                           | 3.9                                                     | 863                                     | 890                     |
| 205                                 | M3_J 315MLA                    | 3G_J316410-_D_183708       | 242                   | 95.9                                       | 2273                  | 0.96                             | 1.2                                           | 5.8                                                     | 863                                     | 1125                    |
| 243                                 | M3_J 315LKB                    | 3G_J316820-_D_183708       | 299                   | 96.0                                       | 2687                  | 0.92                             | 1.5                                           | 7.8                                                     | 863                                     | 1430                    |
| 308                                 | M3_J 315LKC                    | 3G_J316830-_D_183708       | 362                   | 96.2                                       | 3411                  | 0.96                             | 1.4                                           | 9.8                                                     | 863                                     | 1605                    |
| 293                                 | M3_J 355SMB                    | 3G_J356220-_D_183708       | 346                   | 96.1                                       | 3247                  | 0.96                             | 1.8                                           | 17.1                                                    | 863                                     | 1780                    |
| 455                                 | M3_J 355MLB                    | 3G_J356420-_D_183708       | 534                   | 96.4                                       | 5033                  | 0.96                             | 1.5                                           | 22.4                                                    | 863                                     | 2210                    |
| 513                                 | M3_J 355LKB                    | 3G_J356820-_D_183708       | 579                   | 96.4                                       | 5675                  | 1.00                             | 1.5                                           | 28.5                                                    | 863                                     | 2690                    |
| 691                                 | M3_J 400LC                     | 3G_J406530-_D_183708       | 792                   | 97.1                                       | 7645                  | 0.98                             | 1.4                                           | 41.1                                                    | 863                                     | 3280                    |
| 3)                                  | AMZ 0500L_10 _AM               |                            |                       |                                            |                       |                                  |                                               |                                                         |                                         |                         |
| 3)                                  | AMZ 0560L_10 _AM               |                            |                       |                                            |                       |                                  |                                               |                                                         |                                         |                         |

<sup>1)</sup> See ordering information - section for details on motor type and product code, variant code 183 used only with air cooled, IC 416 motors

<sup>2)</sup> Separate cooling fan power not considered in efficiency value

<sup>3)</sup> Output values and more base speeds for IEC 500 and 560 sizes on request

<sup>4)</sup>  $T_{max}/T_N$  value represents maximum short time overloadability with inverter supply. This does not represent the pull-out torque value according to IEC.

# Permanent magnet synchronous motors

## 690 V Technical data

IC 416: Separate cooling or liquid cooled motors

Suitable for constant torque 0 -  $n_n$ , constant power  $n_n$  -  $n_{max}$

Network voltage 690 V, at motor terminals 638 V

| Output<br>kW                        | Type designation <sup>1)</sup> | Product code <sup>1)</sup> | Current<br>$I_N$<br>A | Efficiency<br>Full load <sup>2)</sup><br>% | Torque<br>$T_N$<br>Nm | Power<br>factor<br>cos $\varphi$ | Torque<br>$\frac{T_{max}}{T_N}$ <sup>4)</sup> | Moment<br>of inertia<br>$J=1/4GD^2$<br>kgm <sup>2</sup> | Maximum<br>speed,<br>$n_{max}$<br>r/min | Weight<br>approx.<br>kg |
|-------------------------------------|--------------------------------|----------------------------|-----------------------|--------------------------------------------|-----------------------|----------------------------------|-----------------------------------------------|---------------------------------------------------------|-----------------------------------------|-------------------------|
| <b><math>n_n = 220</math> r/min</b> |                                |                            |                       |                                            |                       |                                  |                                               |                                                         |                                         |                         |
| 30                                  | M3_J 280SMB                    | 3G_J286220-_D_183705       | 33                    | 87.9                                       | 1303                  | 0.92                             | 1.0                                           | 2.2                                                     | 220                                     | 660                     |
| 40                                  | M3_J 315SMC                    | 3G_J316230-_D_183705       | 43                    | 90.5                                       | 1743                  | 0.93                             | 1.1                                           | 3.9                                                     | 220                                     | 890                     |
| 63                                  | M3_J 315MLA                    | 3G_J316410-_D_183705       | 67                    | 91.3                                       | 2734                  | 0.94                             | 1.1                                           | 5.8                                                     | 220                                     | 1125                    |
| 80                                  | M3_J 315LKB                    | 3G_J316820-_D_183705       | 82                    | 91.9                                       | 3472                  | 0.95                             | 1.1                                           | 7.8                                                     | 220                                     | 1430                    |
| 100                                 | M3_J 315LKC                    | 3G_J316830-_D_183705       | 105                   | 92.7                                       | 4350                  | 0.93                             | 1.1                                           | 9.8                                                     | 220                                     | 1605                    |
| 109                                 | M3_J 355SMB                    | 3G_J356220-_D_183705       | 111                   | 92.5                                       | 4769                  | 0.96                             | 1.2                                           | 17.1                                                    | 220                                     | 1780                    |
| 149                                 | M3_J 355MLB                    | 3G_J356420-_D_183705       | 152                   | 92.9                                       | 6501                  | 0.96                             | 1.2                                           | 22.4                                                    | 220                                     | 2210                    |
| 174                                 | M3_J 355LKB                    | 3G_J356820-_D_183705       | 175                   | 93.4                                       | 7591                  | 0.96                             | 1.2                                           | 28.5                                                    | 220                                     | 2690                    |
| 219                                 | M3_J 400LC                     | 3G_J406530-_D_183705       | 217                   | 94.1                                       | 9546                  | 0.97                             | 1.1                                           | 41.1                                                    | 220                                     | 3280                    |
| 305                                 | AMZ 0500LE10 _AM               |                            | 310                   | 95.7                                       | 13240                 | 0.93                             | 1.3                                           | 68                                                      | 264                                     | 5240                    |
| 413                                 | AMZ 0500LJ10 _AM               |                            | 412                   | 96.1                                       | 17928                 | 0.94                             | 1.2                                           | 90                                                      | 264                                     | 6020                    |
| 532                                 | AMZ 0500LN10 _AM               |                            | 529                   | 96.3                                       | 23094                 | 0.94                             | 1.2                                           | 113                                                     | 264                                     | 6800                    |
| 673                                 | AMZ 0500LR10 _AM               |                            | 678                   | 96.5                                       | 29214                 | 0.93                             | 1.3                                           | 135                                                     | 264                                     | 7580                    |
| 834                                 | AMZ 0560LQ10 _AM               |                            | 830                   | 96.8                                       | 36203                 | 0.94                             | 1.4                                           | 224                                                     | 264                                     | 10490                   |
| 1003                                | AMZ 0560LS10 _AM               |                            | 1007                  | 96.9                                       | 43539                 | 0.93                             | 1.4                                           | 265                                                     | 264                                     | 11480                   |
| 1157                                | AMZ 0560LU10 _AM               |                            | 1142                  | 97                                         | 50224                 | 0.94                             | 1.3                                           | 306                                                     | 264                                     | 12470                   |
| <b><math>n_n = 300</math> r/min</b> |                                |                            |                       |                                            |                       |                                  |                                               |                                                         |                                         |                         |
| 41                                  | M3_J 280SMB                    | 3G_J286220-_D_183706       | 45                    | 90.7                                       | 1303                  | 0.91                             | 1.0                                           | 2.2                                                     | 300                                     | 660                     |
| 63                                  | M3_J 315SMC                    | 3G_J316230-_D_183706       | 67                    | 91.8                                       | 2006                  | 0.92                             | 1.0                                           | 3.9                                                     | 300                                     | 890                     |
| 90                                  | M3_J 315MLA                    | 3G_J316410-_D_183706       | 93                    | 92.8                                       | 2864                  | 0.94                             | 1.0                                           | 5.8                                                     | 300                                     | 1125                    |
| 110                                 | M3_J 315LKB                    | 3G_J316820-_D_183706       | 114                   | 93.7                                       | 3500                  | 0.93                             | 1.1                                           | 7.8                                                     | 300                                     | 1430                    |
| 150                                 | M3_J 315LKC                    | 3G_J316830-_D_183706       | 157                   | 93.7                                       | 4786                  | 0.92                             | 1.1                                           | 9.8                                                     | 300                                     | 1605                    |
| 149                                 | M3_J 355SMB                    | 3G_J356220-_D_183706       | 149                   | 94.0                                       | 4769                  | 0.96                             | 1.2                                           | 17.1                                                    | 300                                     | 1780                    |
| 199                                 | M3_J 355MLB                    | 3G_J356420-_D_183706       | 199                   | 94.4                                       | 6355                  | 0.96                             | 1.2                                           | 22.4                                                    | 300                                     | 2210                    |
| 224                                 | M3_J 355LKB                    | 3G_J356820-_D_183706       | 227                   | 94.9                                       | 7153                  | 0.94                             | 1.3                                           | 28.5                                                    | 300                                     | 2690                    |
| 299                                 | M3_J 400LC                     | 3G_J406530-_D_183706       | 293                   | 95.3                                       | 9543                  | 0.97                             | 1.1                                           | 41.1                                                    | 300                                     | 3280                    |
| 414                                 | AMZ 0500LE10 _AM               |                            | 416                   | 96.5                                       | 13179                 | 0.93                             | 1.2                                           | 68                                                      | 360                                     | 5240                    |
| 574                                 | AMZ 0500LJ10 _AM               |                            | 573                   | 96.8                                       | 18272                 | 0.93                             | 1.3                                           | 90                                                      | 360                                     | 6020                    |
| 746                                 | AMZ 0500LN10 _AM               |                            | 746                   | 97.0                                       | 23748                 | 0.93                             | 1.3                                           | 113                                                     | 360                                     | 6800                    |
| 918                                 | AMZ 0500LR10 _AM               |                            | 923                   | 97.2                                       | 29223                 | 0.92                             | 1.3                                           | 135                                                     | 360                                     | 7580                    |
| 1138                                | AMZ 0560LQ10 _AM               |                            | 1131                  | 97.4                                       | 36226                 | 0.93                             | 1.4                                           | 224                                                     | 360                                     | 10490                   |
| 1322                                | AMZ 0560LS10 _AM               |                            | 1289                  | 97.4                                       | 42084                 | 0.95                             | 1.4                                           | 265                                                     | 360                                     | 11480                   |
| 1542                                | AMZ 0560LU10 _AM               |                            | 1503                  | 97.5                                       | 49087                 | 0.95                             | 1.4                                           | 306                                                     | 360                                     | 12470                   |
| <b><math>n_n = 380</math> r/min</b> |                                |                            |                       |                                            |                       |                                  |                                               |                                                         |                                         |                         |
| 51                                  | M3_J 280SMB                    | 3G_J286220-_D_183705       | 55                    | 91.9                                       | 1283                  | 0.91                             | 1.0                                           | 2.2                                                     | 380                                     | 660                     |
| 66                                  | M3_J 315SMC                    | 3G_J316230-_D_183705       | 70                    | 93.3                                       | 1653                  | 0.91                             | 1.2                                           | 3.9                                                     | 380                                     | 890                     |
| 103                                 | M3_J 315MLA                    | 3G_J316410-_D_183705       | 107                   | 93.9                                       | 2599                  | 0.93                             | 1.1                                           | 5.8                                                     | 380                                     | 1125                    |
| 131                                 | M3_J 315LKB                    | 3G_J316820-_D_183705       | 132                   | 94.3                                       | 3289                  | 0.95                             | 1.1                                           | 7.8                                                     | 380                                     | 1430                    |
| 160                                 | M3_J 315LKC                    | 3G_J316830-_D_183705       | 165                   | 94.8                                       | 4023                  | 0.93                             | 1.2                                           | 9.8                                                     | 380                                     | 1605                    |
| 177                                 | M3_J 355SMB                    | 3G_J356220-_D_183705       | 176                   | 94.7                                       | 4451                  | 0.96                             | 1.3                                           | 17.1                                                    | 380                                     | 1780                    |
| 241                                 | M3_J 355MLB                    | 3G_J356420-_D_183705       | 240                   | 94.9                                       | 6065                  | 0.96                             | 1.3                                           | 22.4                                                    | 380                                     | 2210                    |
| 278                                 | M3_J 355LKB                    | 3G_J356820-_D_183705       | 274                   | 95.2                                       | 6985                  | 0.96                             | 1.3                                           | 28.5                                                    | 380                                     | 2690                    |
| 353                                 | M3_J 400LC                     | 3G_J406530-_D_183705       | 342                   | 95.8                                       | 8887                  | 0.98                             | 1.2                                           | 41.1                                                    | 380                                     | 3280                    |
| 527                                 | AMZ 0500LE10 _AM               |                            | 530                   | 97.0                                       | 13244                 | 0.92                             | 1.3                                           | 68                                                      | 456                                     | 5240                    |
| 739                                 | AMZ 0500LJ10 _AM               |                            | 742                   | 97.2                                       | 18572                 | 0.92                             | 1.3                                           | 90                                                      | 456                                     | 6020                    |
| 931                                 | AMZ 0500LN10 _AM               |                            | 924                   | 97.4                                       | 23398                 | 0.93                             | 1.3                                           | 113                                                     | 456                                     | 6800                    |
| 1149                                | AMZ 0560LL10 _AM               |                            | 1135                  | 97.6                                       | 28876                 | 0.93                             | 1.4                                           | 183                                                     | 456                                     | 9500                    |
| 1538                                | AMZ 0560LR10 _AM               |                            | 1499                  | 97.7                                       | 38652                 | 0.94                             | 1.4                                           | 245                                                     | 456                                     | 10990                   |
| 1845                                | AMZ 0560LT10 _AM               |                            | 1809                  | 97.8                                       | 46368                 | 0.94                             | 1.4                                           | 286                                                     | 456                                     | 11980                   |

<sup>1)</sup> See ordering information - section for details on motor type and product code, variant code 183 used only with air cooled, IC 416 motors

<sup>2)</sup> Separate cooling fan power not considered in efficiency value

<sup>3)</sup> Output values and more base speeds for IEC 500 and 560 sizes on request

<sup>4)</sup>  $T_{max}/T_N$  value represents maximum short time overloadability with inverter supply. This does not represent the pull-out torque value according to IEC.

# Permanent magnet synchronous motors

## 690 V Technical data

IC 416: Separate cooling or liquid cooled motors

Suitable for constant torque 0 -  $n_n$ , constant power  $n_n$  -  $n_{max}$

Network voltage 690 V, at motor terminals 638 V

| Output<br>kW                        | Type designation <sup>1)</sup> | Product code <sup>1)</sup> | Current<br>$I_N$<br>A | Efficiency<br>Full load <sup>2)</sup><br>% | Torque<br>$T_N$<br>Nm | Power<br>factor<br>$\cos \varphi$ | Torque<br>$\frac{T_{max}}{T_N}$ <sup>4)</sup> | Moment<br>of inertia<br>$J=1/4GD^2$<br>kgm <sup>2</sup> | Maximum<br>speed,<br>$n_{max}$<br>r/min | Weight<br>approx.<br>kg |
|-------------------------------------|--------------------------------|----------------------------|-----------------------|--------------------------------------------|-----------------------|-----------------------------------|-----------------------------------------------|---------------------------------------------------------|-----------------------------------------|-------------------------|
| <b><math>n_n = 430</math> r/min</b> |                                |                            |                       |                                            |                       |                                   |                                               |                                                         |                                         |                         |
| 55                                  | M3_J 280SMB                    | 3G_J286220-_D_183707       | 58                    | 92.9                                       | 1222                  | 0.92                              | 1.0                                           | 2.2                                                     | 430                                     | 660                     |
| 80                                  | M3_J 315SMC                    | 3G_J316230-_D_183707       | 82                    | 93.9                                       | 1776                  | 0.94                              | 1.1                                           | 3.9                                                     | 430                                     | 890                     |
| 124                                 | M3_J 315MLA                    | 3G_J316410-_D_183707       | 129                   | 94.5                                       | 2774                  | 0.93                              | 1.1                                           | 5.8                                                     | 430                                     | 1125                    |
| 149                                 | M3_J 315LKB                    | 3G_J316820-_D_183707       | 152                   | 95.0                                       | 3329                  | 0.94                              | 1.2                                           | 7.8                                                     | 430                                     | 1430                    |
| 199                                 | M3_J 315LKC                    | 3G_J316830-_D_183707       | 203                   | 95.1                                       | 4440                  | 0.94                              | 1.1                                           | 9.8                                                     | 430                                     | 1605                    |
| 199                                 | M3_J 355SMB                    | 3G_J356220-_D_183707       | 193                   | 95.0                                       | 4440                  | 0.98                              | 1.2                                           | 17.1                                                    | 430                                     | 1780                    |
| 278                                 | M3_J 355MLB                    | 3G_J356420-_D_183707       | 281                   | 95.6                                       | 6205                  | 0.94                              | 1.3                                           | 22.4                                                    | 430                                     | 2210                    |
| 333                                 | M3_J 355LKB                    | 3G_J356820-_D_183707       | 328                   | 95.8                                       | 7433                  | 0.96                              | 1.3                                           | 28.5                                                    | 430                                     | 2690                    |
| 421                                 | M3_J 400LC                     | 3G_J406530-_D_183707       | 432                   | 96.3                                       | 9394                  | 0.92                              | 1.3                                           | 41.1                                                    | 430                                     | 3280                    |
| 572                                 | AMZ 0500LE10 _AM               |                            | 564                   | 97.2                                       | 12704                 | 0.94                              | 1.3                                           | 68                                                      | 516                                     | 5240                    |
| 826                                 | AMZ 0500LJ10 _AM               |                            | 823                   | 97.4                                       | 18345                 | 0.93                              | 1.3                                           | 90                                                      | 516                                     | 6020                    |
| 1061                                | AMZ 0500LN10 _AM               |                            | 1055                  | 97.5                                       | 23564                 | 0.93                              | 1.3                                           | 113                                                     | 516                                     | 6800                    |
| 1298                                | AMZ 0560LL10 _AM               |                            | 1286                  | 97.7                                       | 28828                 | 0.93                              | 1.4                                           | 183                                                     | 516                                     | 9500                    |
| 1781                                | AMZ 0560LR10 _AM               |                            | 1796                  | 97.8                                       | 39555                 | 0.93                              | 1.4                                           | 245                                                     | 516                                     | 10990                   |
| 2267                                | AMZ 0560LU10 _AM               |                            | 2244                  | 97.9                                       | 50348                 | 0.93                              | 1.4                                           | 306                                                     | 516                                     | 12470                   |
| <b><math>n_n = 518</math> r/min</b> |                                |                            |                       |                                            |                       |                                   |                                               |                                                         |                                         |                         |
| 68                                  | M3_J 280SMB                    | 3G_J286220-_D_183706       | 72                    | 93.5                                       | 1245                  | 0.91                              | 1.0                                           | 2.2                                                     | 518                                     | 660                     |
| 103                                 | M3_J 315SMC                    | 3G_J316230-_D_183706       | 107                   | 94.2                                       | 1899                  | 0.92                              | 1.1                                           | 3.9                                                     | 518                                     | 890                     |
| 145                                 | M3_J 315MLA                    | 3G_J316410-_D_183706       | 147                   | 94.8                                       | 2674                  | 0.94                              | 1.1                                           | 5.8                                                     | 518                                     | 1125                    |
| 170                                 | M3_J 315LKB                    | 3G_J316820-_D_183706       | 174                   | 95.3                                       | 3139                  | 0.93                              | 1.3                                           | 7.8                                                     | 518                                     | 1430                    |
| 235                                 | M3_J 315LKC                    | 3G_J316830-_D_183706       | 241                   | 95.4                                       | 4344                  | 0.93                              | 1.2                                           | 9.8                                                     | 518                                     | 1605                    |
| 233                                 | M3_J 355SMB                    | 3G_J356220-_D_183706       | 228                   | 95.5                                       | 4296                  | 0.97                              | 1.3                                           | 17.1                                                    | 518                                     | 1780                    |
| 307                                 | M3_J 355MLB                    | 3G_J356420-_D_183706       | 301                   | 95.8                                       | 5656                  | 0.96                              | 1.3                                           | 22.4                                                    | 518                                     | 2210                    |
| 326                                 | M3_J 355LKB                    | 3G_J356820-_D_183706       | 328                   | 95.9                                       | 6011                  | 0.94                              | 1.5                                           | 28.5                                                    | 518                                     | 2690                    |
| 462                                 | M3_J 400LC                     | 3G_J406530-_D_183706       | 445                   | 96.5                                       | 8532                  | 0.97                              | 1.3                                           | 41.1                                                    | 518                                     | 3280                    |
| 714                                 | AMZ 0500LE10 _AM               |                            | 733                   | 97.4                                       | 13164                 | 0.92                              | 1.3                                           | 68                                                      | 622                                     | 5240                    |
| 1423                                | AMZ 0500LQ10 _AM               |                            | 1458                  | 97.8                                       | 26235                 | 0.92                              | 1.3                                           | 124                                                     | 622                                     | 7190                    |
| 1527                                | AMZ 0560LL10 _AM               |                            | 1491                  | 97.9                                       | 28152                 | 0.94                              | 1.4                                           | 183                                                     | 622                                     | 9500                    |
| 2285                                | AMZ 0560LS10 _AM               |                            | 2228                  | 98.0                                       | 42127                 | 0.94                              | 1.4                                           | 265                                                     | 622                                     | 11480                   |
| <b><math>n_n = 600</math> r/min</b> |                                |                            |                       |                                            |                       |                                   |                                               |                                                         |                                         |                         |
| 80                                  | M3_J 280SMB                    | 3G_J286220-_D_183708       | 86                    | 94.1                                       | 1274                  | 0.90                              | 1.0                                           | 2.2                                                     | 600                                     | 660                     |
| 110                                 | M3_J 315SMC                    | 3G_J316230-_D_183708       | 113                   | 95.0                                       | 1750                  | 0.93                              | 1.1                                           | 3.9                                                     | 600                                     | 890                     |
| 159                                 | M3_J 315MLA                    | 3G_J316410-_D_183708       | 159                   | 95.4                                       | 2546                  | 0.95                              | 1.1                                           | 5.8                                                     | 600                                     | 1125                    |
| 199                                 | M3_J 315LKB                    | 3G_J316820-_D_183708       | 205                   | 95.8                                       | 3179                  | 0.92                              | 1.3                                           | 7.8                                                     | 600                                     | 1430                    |
| 249                                 | M3_J 315LKC                    | 3G_J316830-_D_183708       | 247                   | 95.9                                       | 3976                  | 0.95                              | 1.2                                           | 9.8                                                     | 600                                     | 1605                    |
| 249                                 | M3_J 355SMB                    | 3G_J356220-_D_183708       | 245                   | 96.0                                       | 3973                  | 0.96                              | 1.4                                           | 17.1                                                    | 600                                     | 1780                    |
| 373                                 | M3_J 355MLB                    | 3G_J356420-_D_183708       | 368                   | 96.2                                       | 5963                  | 0.95                              | 1.3                                           | 22.4                                                    | 600                                     | 2210                    |
| 423                                 | M3_J 355LKB                    | 3G_J356820-_D_183708       | 402                   | 96.2                                       | 6763                  | 0.99                              | 1.3                                           | 28.5                                                    | 600                                     | 2690                    |
| 557                                 | M3_J 400LC                     | 3G_J406530-_D_183708       | 539                   | 96.9                                       | 8904                  | 0.97                              | 1.2                                           | 41.1                                                    | 600                                     | 3280                    |
| 819                                 | AMZ 0500LE10 _AM               |                            | 816                   | 97.5                                       | 13036                 | 0.93                              | 1.3                                           | 68                                                      | 720                                     | 5240                    |
| 1468                                | AMZ 0500LN10 _AM               |                            | 1457                  | 97.8                                       | 23366                 | 0.93                              | 1.3                                           | 113                                                     | 720                                     | 6800                    |
| 1800                                | AMZ 0500LR10 _AM               |                            | 1808                  | 97.9                                       | 28650                 | 0.92                              | 1.3                                           | 135                                                     | 720                                     | 7580                    |
| 2235                                | AMZ 0560LQ10 _AM               |                            | 2219                  | 98.1                                       | 35574                 | 0.93                              | 1.4                                           | 224                                                     | 720                                     | 10490                   |
| 2594                                | AMZ 0560LU10 _AM               |                            | 2467                  | 98.2                                       | 41288                 | 0.96                              | 1.6                                           | 306                                                     | 720                                     | 12470                   |

<sup>1)</sup> See ordering information - section for details on motor type and product code, variant code 183 used only with air cooled, IC 416 motors

<sup>2)</sup> Separate cooling fan power not considered in efficiency value

<sup>3)</sup> Output values and more base speeds for IEC 500 and 560 sizes on request

<sup>4)</sup>  $T_{max}/T_N$  value represents maximum short time overloadability with inverter supply. This does not represent the pull-out torque value according to IEC.

# Permanent magnet synchronous motors

## 690 V Technical data

IC 416: Separate cooling or liquid cooled motors

Suitable for constant torque 0 -  $n_n$ , constant power  $n_n$  -  $n_{max}$

Network voltage 690 V, at motor terminals 638 V

| Output<br>kW      | Type designation <sup>1)</sup> | Product code <sup>1)</sup> | Current<br>$I_N$<br>A | Efficiency<br>Full load <sup>2)</sup><br>% | Torque<br>$T_N$<br>Nm | Power<br>factor<br>$\cos \varphi$ | Torque<br>$\frac{T_{max}}{T_N}$ <sup>4)</sup> | Moment<br>of inertia<br>$J=1/4GD^2$<br>kgm <sup>2</sup> | Maximum<br>speed,<br>$n_{max}$<br>r/min | Weight<br>approx.<br>kg |
|-------------------|--------------------------------|----------------------------|-----------------------|--------------------------------------------|-----------------------|-----------------------------------|-----------------------------------------------|---------------------------------------------------------|-----------------------------------------|-------------------------|
| $n_n = 742$ r/min |                                |                            |                       |                                            |                       |                                   |                                               |                                                         |                                         |                         |
| 86                | M3_J 280SMB                    | 3G_J286220-_D_183707       | 90                    | 94.6                                       | 1106                  | 0.92                              | 1.1                                           | 2.2                                                     | 742                                     | 660                     |
| 123               | M3_J 315SMC                    | 3G_J316230-_D_183707       | 123                   | 95.3                                       | 1580                  | 0.95                              | 1.2                                           | 3.9                                                     | 742                                     | 890                     |
| 188               | M3_J 315MLA                    | 3G_J316410-_D_183707       | 191                   | 95.7                                       | 2417                  | 0.93                              | 1.3                                           | 5.8                                                     | 742                                     | 1125                    |
| 215               | M3_J 315LKB                    | 3G_J316820-_D_183707       | 216                   | 95.9                                       | 2772                  | 0.94                              | 1.4                                           | 7.8                                                     | 742                                     | 1430                    |
| 290               | M3_J 315LKC                    | 3G_J316830-_D_183707       | 289                   | 96.0                                       | 3730                  | 0.95                              | 1.3                                           | 9.8                                                     | 742                                     | 1605                    |
| 291               | M3_J 355SMB                    | 3G_J356220-_D_183707       | 277                   | 96.0                                       | 3748                  | 0.99                              | 1.4                                           | 17.1                                                    | 742                                     | 1780                    |
| 384               | M3_J 355MLB                    | 3G_J356420-_D_183707       | 387                   | 96.2                                       | 4940                  | 0.93                              | 1.6                                           | 22.4                                                    | 742                                     | 2210                    |
| 452               | M3_J 355LKB                    | 3G_J356820-_D_183707       | 439                   | 96.3                                       | 5818                  | 0.97                              | 1.7                                           | 28.5                                                    | 742                                     | 2690                    |
| 569               | M3_J 400LC                     | 3G_J406530-_D_183707       | 584                   | 96.8                                       | 7321                  | 0.91                              | 1.7                                           | 41.1                                                    | 742                                     | 3280                    |
| 1007              | AMZ 0500LE10 _AM               |                            | 1030                  | 97.7                                       | 12961                 | 0.92                              | 1.3                                           | 68                                                      | 890                                     | 5240                    |
| 1403              | AMZ 0500LJ10 _AM               |                            | 1432                  | 97.8                                       | 18057                 | 0.92                              | 1.3                                           | 90                                                      | 890                                     | 6020                    |
| 1801              | AMZ 0500LN10 _AM               |                            | 1790                  | 97.9                                       | 23180                 | 0.92                              | 1.3                                           | 113                                                     | 890                                     | 6800                    |
| 2185              | AMZ 0560LL10 _AM               |                            | 2192                  | 98.1                                       | 28122                 | 0.93                              | 1.4                                           | 183                                                     | 890                                     | 9500                    |
| 2592              | AMZ 0560LR10 _AM               |                            | 2495                  | 98.1                                       | 33361                 | 0.95                              | 1.6                                           | 245                                                     | 890                                     | 10990                   |

<sup>1)</sup> See ordering information - section for details on motor type and product code, variant code 183 used only with air cooled, IC416 motors

<sup>2)</sup> Separate cooling fan power not considered in efficiency value

<sup>3)</sup> Output values and more base speeds for IEC 500 and 560 sizes on request

<sup>4)</sup>  $T_{max}/T_N$  value represents maximum short time overloadability with inverter supply. This does not represent the pull-out torque value according to IEC.

# Permanent magnet synchronous motors

## 400 V Technical data

### IC 411: Self ventilated motors

Loadability according to Figure 1 on page 6

Network voltage 400 V, at motor terminals 370 V

400 V

| Output<br>kW               | Type designation <sup>1)</sup> | Product code <sup>1)</sup> | Current<br><br>$I_N$<br><br>A | Efficiency<br><br>Full load<br>% | Torque<br><br>$T_N$<br><br>Nm | Power<br>factor<br>$\cos \varphi$ | Torque<br><br>$\frac{T_{max}}{T_N^{3)}$ | Moment<br>of inertia<br>$J=1/4GD^2$<br>kgm <sup>2</sup> | Maximum<br>speed,<br><br>$n_{max}$<br>r/min | Weight<br>approx.<br>kg |
|----------------------------|--------------------------------|----------------------------|-------------------------------|----------------------------------|-------------------------------|-----------------------------------|-----------------------------------------|---------------------------------------------------------|---------------------------------------------|-------------------------|
| n <sub>n</sub> = 127 r/min |                                |                            |                               |                                  |                               |                                   |                                         |                                                         |                                             |                         |
| 11                         | M3BJ 280SMB                    | 3GBJ286220-_DG705          | 21                            | 86.5                             | 819                           | 0.93                              | 1.4                                     | 2.2                                                     | 152                                         | 650                     |
| 16                         | M3BJ 315SMC                    | 3GBJ316230-_DG705          | 31                            | 88.1                             | 1228                          | 0.92                              | 1.5                                     | 3.9                                                     | 152                                         | 880                     |
| 24                         | M3BJ 315MLA                    | 3GBJ316410-_DG705          | 45                            | 90.0                             | 1833                          | 0.94                              | 1.5                                     | 5.8                                                     | 152                                         | 1115                    |
| 30                         | M3BJ 315LKB                    | 3GBJ316820-_DG705          | 53                            | 90.9                             | 2242                          | 0.97                              | 1.5                                     | 7.8                                                     | 152                                         | 1415                    |
| 41                         | M3BJ 315LKC                    | 3GBJ316830-_DG705          | 75                            | 91.2                             | 3052                          | 0.93                              | 1.5                                     | 9.8                                                     | 152                                         | 1590                    |
| 40                         | M3BJ 355SMB                    | 3GBJ356220-_DG705          | 72                            | 91.4                             | 3038                          | 0.96                              | 1.8                                     | 17.1                                                    | 152                                         | 1765                    |
| 54                         | M3BJ 355MLB                    | 3GBJ356420-_DG705          | 96                            | 91.8                             | 4047                          | 0.95                              | 1.8                                     | 22.4                                                    | 152                                         | 2190                    |
| 67                         | M3BJ 355LKB                    | 3GBJ356820-_DG705          | 116                           | 92.5                             | 5067                          | 0.98                              | 1.7                                     | 28.5                                                    | 152                                         | 2670                    |
| 81                         | M3BJ 400LC                     | 3GBJ406530-_DG705          | 137                           | 93.5                             | 6103                          | 0.99                              | 1.6                                     | 41.1                                                    | 152                                         | 3260                    |
| 2)                         | AMZ 0500L_10 RAM               |                            |                               |                                  |                               |                                   |                                         |                                                         |                                             |                         |
| 2)                         | AMZ 0560L_10 RAM               |                            |                               |                                  |                               |                                   |                                         |                                                         |                                             |                         |
| n <sub>n</sub> = 173 r/min |                                |                            |                               |                                  |                               |                                   |                                         |                                                         |                                             |                         |
| 16                         | M3BJ 280SMB                    | 3GBJ286220-_DG706          | 31                            | 89.1                             | 899                           | 0.93                              | 1.3                                     | 2.2                                                     | 208                                         | 650                     |
| 24                         | M3BJ 315SMC                    | 3GBJ316230-_DG706          | 45                            | 90.7                             | 1343                          | 0.93                              | 1.4                                     | 3.9                                                     | 208                                         | 880                     |
| 34                         | M3BJ 315MLA                    | 3GBJ316410-_DG706          | 61                            | 91.9                             | 1880                          | 0.95                              | 1.5                                     | 5.8                                                     | 208                                         | 1115                    |
| 43                         | M3BJ 315LKB                    | 3GBJ316820-_DG706          | 79                            | 92.7                             | 2385                          | 0.93                              | 1.6                                     | 7.8                                                     | 208                                         | 1415                    |
| 54                         | M3BJ 315LKC                    | 3GBJ316830-_DG706          | 99                            | 92.8                             | 2980                          | 0.91                              | 1.6                                     | 9.8                                                     | 208                                         | 1590                    |
| 54                         | M3BJ 355SMB                    | 3GBJ356220-_DG706          | 93                            | 93.1                             | 2967                          | 0.97                              | 1.8                                     | 17.1                                                    | 208                                         | 1765                    |
| 81                         | M3BJ 355MLB                    | 3GBJ356420-_DG706          | 140                           | 93.5                             | 4447                          | 0.96                              | 1.6                                     | 22.4                                                    | 208                                         | 2190                    |
| 99                         | M3BJ 355LKB                    | 3GBJ356820-_DG706          | 173                           | 93.9                             | 5481                          | 0.95                              | 1.7                                     | 28.5                                                    | 208                                         | 2670                    |
| 119                        | M3BJ 400LC                     | 3GBJ406530-_DG706          | 200                           | 94.6                             | 6557                          | 0.98                              | 1.6                                     | 41.1                                                    | 208                                         | 3260                    |
| 2)                         | AMZ 0500L_10 RAM               |                            |                               |                                  |                               |                                   |                                         |                                                         |                                             |                         |
| 2)                         | AMZ 0560L_10 RAM               |                            |                               |                                  |                               |                                   |                                         |                                                         |                                             |                         |
| n <sub>n</sub> = 220 r/min |                                |                            |                               |                                  |                               |                                   |                                         |                                                         |                                             |                         |
| 20                         | M3BJ 280SMB                    | 3GBJ286220-_DG705          | 39                            | 90.1                             | 869                           | 0.90                              | 1.3                                     | 2.2                                                     | 264                                         | 650                     |
| 30                         | M3BJ 315SMC                    | 3GBJ316230-_DG705          | 57                            | 91.2                             | 1307                          | 0.90                              | 1.4                                     | 3.9                                                     | 264                                         | 880                     |
| 45                         | M3BJ 315MLA                    | 3GBJ316410-_DG705          | 83                            | 92.6                             | 1953                          | 0.92                              | 1.4                                     | 5.8                                                     | 264                                         | 1115                    |
| 55                         | M3BJ 315LKB                    | 3GBJ316820-_DG705          | 97                            | 93.2                             | 2387                          | 0.95                              | 1.4                                     | 7.8                                                     | 264                                         | 1415                    |
| 75                         | M3BJ 315LKC                    | 3GBJ316830-_DG705          | 137                           | 93.5                             | 3254                          | 0.91                              | 1.4                                     | 9.8                                                     | 264                                         | 1590                    |
| 75                         | M3BJ 355SMB                    | 3GBJ356220-_DG705          | 132                           | 93.4                             | 3253                          | 0.95                              | 1.6                                     | 17.1                                                    | 264                                         | 1765                    |
| 100                        | M3BJ 355MLB                    | 3GBJ356420-_DG705          | 177                           | 93.9                             | 4335                          | 0.94                              | 1.7                                     | 22.4                                                    | 264                                         | 2190                    |
| 125                        | M3BJ 355LKB                    | 3GBJ356820-_DG705          | 212                           | 94.3                             | 5422                          | 0.98                              | 1.6                                     | 28.5                                                    | 264                                         | 2670                    |
| 150                        | M3BJ 400LC                     | 3GBJ406530-_DG705          | 251                           | 95.1                             | 6507                          | 0.98                              | 1.5                                     | 41.1                                                    | 264                                         | 3260                    |
| 2)                         | AMZ 0500L_10 RAM               |                            |                               |                                  |                               |                                   |                                         |                                                         |                                             |                         |
| 2)                         | AMZ 0560L_10 RAM               |                            |                               |                                  |                               |                                   |                                         |                                                         |                                             |                         |
| n <sub>n</sub> = 248 r/min |                                |                            |                               |                                  |                               |                                   |                                         |                                                         |                                             |                         |
| 25                         | M3BJ 280SMB                    | 3GBJ286220-_DG707          | 45                            | 91.4                             | 940                           | 0.93                              | 1.3                                     | 2.2                                                     | 298                                         | 650                     |
| 34                         | M3BJ 315SMC                    | 3GBJ316230-_DG707          | 60                            | 92.7                             | 1312                          | 0.95                              | 1.4                                     | 3.9                                                     | 298                                         | 880                     |
| 54                         | M3BJ 315MLA                    | 3GBJ316410-_DG707          | 97                            | 93.3                             | 2079                          | 0.93                              | 1.4                                     | 5.8                                                     | 298                                         | 1115                    |
| 68                         | M3BJ 315LKB                    | 3GBJ316820-_DG707          | 119                           | 94.0                             | 2599                          | 0.94                              | 1.4                                     | 7.8                                                     | 298                                         | 1415                    |
| 87                         | M3BJ 315LKC                    | 3GBJ316830-_DG707          | 152                           | 94.2                             | 3327                          | 0.95                              | 1.4                                     | 9.8                                                     | 298                                         | 1590                    |
| 81                         | M3BJ 355SMB                    | 3GBJ356220-_DG707          | 135                           | 94.3                             | 3111                          | 0.99                              | 1.6                                     | 17.1                                                    | 298                                         | 1765                    |
| 118                        | M3BJ 355MLB                    | 3GBJ356420-_DG707          | 211                           | 94.7                             | 4535                          | 0.92                              | 1.7                                     | 22.4                                                    | 298                                         | 2190                    |
| 150                        | M3BJ 355LKB                    | 3GBJ356820-_DG707          | 256                           | 94.9                             | 5787                          | 0.97                              | 1.6                                     | 28.5                                                    | 298                                         | 2670                    |
| 181                        | M3BJ 400LC                     | 3GBJ406530-_DG707          | 330                           | 95.6                             | 6941                          | 0.89                              | 1.7                                     | 41.1                                                    | 298                                         | 3260                    |
| 2)                         | AMZ 0500L_10 RAM               |                            |                               |                                  |                               |                                   |                                         |                                                         |                                             |                         |
| 2)                         | AMZ 0560L_10 RAM               |                            |                               |                                  |                               |                                   |                                         |                                                         |                                             |                         |

<sup>1)</sup> See ordering information - section for details on motor type and product code.

<sup>2)</sup> Performance values for IEC frame sizes 500 and 560 on request

<sup>3)</sup>  $T_{max}/T_n$  value represents maximum short time overloadability with inverter supply. This does not represent the pull-out torque value according to IEC.

# Permanent magnet synchronous motors

## 400 V Technical data

### IC 411: Self ventilated motors

Loadability according to Figure 1 on page 6

Network voltage 400 V, at motor terminals 370 V

| Output<br>kW               | Type designation <sup>1)</sup> | Product code <sup>1)</sup> | Current<br>$I_N$<br>A | Efficiency<br>Full load<br>% | Torque<br>$T_N$<br>Nm | Power<br>factor<br>$\cos \varphi$ | Torque<br>$\frac{T_{max}}{T_N^{3)}$ | Moment of inertia<br>$J=1/4GD^2$<br>kgm <sup>2</sup> | Maximum<br>speed,<br>$n_{max}$<br>r/min | Weight<br>approx.<br>kg |
|----------------------------|--------------------------------|----------------------------|-----------------------|------------------------------|-----------------------|-----------------------------------|-------------------------------------|------------------------------------------------------|-----------------------------------------|-------------------------|
| n <sub>n</sub> = 300 r/min |                                |                            |                       |                              |                       |                                   |                                     |                                                      |                                         |                         |
| 30                         | M3BJ 280SMB                    | 3GBJ286220-_DG706          | 57                    | 91.7                         | 955                   | 0.90                              | 1.3                                 | 2.2                                                  | 360                                     | 650                     |
| 45                         | M3BJ 315SMC                    | 3GBJ316230-_DG706          | 83                    | 93.0                         | 1432                  | 0.91                              | 1.3                                 | 3.9                                                  | 360                                     | 880                     |
| 63                         | M3BJ 315MLA                    | 3GBJ316410-_DG706          | 112                   | 93.9                         | 2004                  | 0.94                              | 1.4                                 | 5.8                                                  | 360                                     | 1115                    |
| 80                         | M3BJ 315LKB                    | 3GBJ316820-_DG706          | 145                   | 94.3                         | 2546                  | 0.91                              | 1.5                                 | 7.8                                                  | 360                                     | 1415                    |
| 100                        | M3BJ 315LKC                    | 3GBJ316830-_DG706          | 183                   | 94.5                         | 3183                  | 0.90                              | 1.5                                 | 9.8                                                  | 360                                     | 1590                    |
| 100                        | M3BJ 355SMB                    | 3GBJ356220-_DG706          | 172                   | 94.6                         | 3180                  | 0.96                              | 1.7                                 | 17.1                                                 | 360                                     | 1765                    |
| 150                        | M3BJ 355MLB                    | 3GBJ356420-_DG706          | 258                   | 94.9                         | 4767                  | 0.95                              | 1.5                                 | 22.4                                                 | 360                                     | 2190                    |
| 185                        | M3BJ 355LKB                    | 3GBJ356820-_DG706          | 321                   | 95.2                         | 5886                  | 0.95                              | 1.6                                 | 28.5                                                 | 360                                     | 2670                    |
| 220                        | M3BJ 400LC                     | 3GBJ406530-_DG706          | 368                   | 95.9                         | 6996                  | 0.97                              | 1.5                                 | 41.1                                                 | 360                                     | 3260                    |
| 2)                         | AMZ 0500L_10 RAM               |                            |                       |                              |                       |                                   |                                     |                                                      |                                         |                         |
| 2)                         | AMZ 0560L_10 RAM               |                            |                       |                              |                       |                                   |                                     |                                                      |                                         |                         |
| n <sub>n</sub> = 346 r/min |                                |                            |                       |                              |                       |                                   |                                     |                                                      |                                         |                         |
| 36                         | M3BJ 280SMB                    | 3GBJ286220-_DG708          | 68                    | 92.9                         | 1003                  | 0.90                              | 1.3                                 | 2.2                                                  | 415                                     | 650                     |
| 54                         | M3BJ 315SMC                    | 3GBJ316230-_DG708          | 96                    | 93.9                         | 1490                  | 0.94                              | 1.3                                 | 3.9                                                  | 415                                     | 880                     |
| 71                         | M3BJ 315MLA                    | 3GBJ316410-_DG708          | 122                   | 94.6                         | 1969                  | 0.96                              | 1.4                                 | 5.8                                                  | 415                                     | 1115                    |
| 86                         | M3BJ 315LKB                    | 3GBJ316820-_DG708          | 157                   | 94.9                         | 2379                  | 0.91                              | 1.6                                 | 7.8                                                  | 415                                     | 1415                    |
| 108                        | M3BJ 315LKC                    | 3GBJ316830-_DG708          | 184                   | 95.2                         | 2980                  | 0.96                              | 1.5                                 | 9.8                                                  | 415                                     | 1590                    |
| 107                        | M3BJ 355SMB                    | 3GBJ356220-_DG708          | 185                   | 95.3                         | 2960                  | 0.95                              | 1.9                                 | 17.1                                                 | 415                                     | 1765                    |
| 180                        | M3BJ 355MLB                    | 3GBJ356420-_DG708          | 307                   | 95.5                         | 4960                  | 0.96                              | 1.5                                 | 22.4                                                 | 415                                     | 2190                    |
| 191                        | M3BJ 355LKB                    | 3GBJ356820-_DG708          | 313                   | 95.6                         | 5274                  | 1.00                              | 1.6                                 | 28.5                                                 | 415                                     | 2670                    |
| 254                        | M3BJ 400LC                     | 3GBJ406530-_DG708          | 422                   | 96.4                         | 6996                  | 0.97                              | 1.5                                 | 41.1                                                 | 415                                     | 3260                    |
| 2)                         | AMZ 0500L_10 RAM               |                            |                       |                              |                       |                                   |                                     |                                                      |                                         |                         |
| 2)                         | AMZ 0560L_10 RAM               |                            |                       |                              |                       |                                   |                                     |                                                      |                                         |                         |
| n <sub>n</sub> = 430 r/min |                                |                            |                       |                              |                       |                                   |                                     |                                                      |                                         |                         |
| 45                         | M3BJ 280SMB                    | 3GBJ286220-_DG707          | 82                    | 93.4                         | 1000                  | 0.91                              | 1.2                                 | 2.2                                                  | 516                                     | 650                     |
| 63                         | M3BJ 315SMC                    | 3GBJ316230-_DG707          | 111                   | 94.3                         | 1399                  | 0.94                              | 1.3                                 | 3.9                                                  | 516                                     | 880                     |
| 100                        | M3BJ 315MLA                    | 3GBJ316410-_DG707          | 178                   | 94.9                         | 2219                  | 0.92                              | 1.3                                 | 5.8                                                  | 516                                     | 1115                    |
| 125                        | M3BJ 315LKB                    | 3GBJ316820-_DG707          | 220                   | 95.2                         | 2774                  | 0.93                              | 1.4                                 | 7.8                                                  | 516                                     | 1415                    |
| 160                        | M3BJ 315LKC                    | 3GBJ316830-_DG707          | 280                   | 95.4                         | 3552                  | 0.93                              | 1.3                                 | 9.8                                                  | 516                                     | 1590                    |
| 150                        | M3BJ 355SMB                    | 3GBJ356220-_DG707          | 249                   | 95.4                         | 3331                  | 0.99                              | 1.5                                 | 17.1                                                 | 516                                     | 1765                    |
| 220                        | M3BJ 355MLB                    | 3GBJ356420-_DG707          | 392                   | 95.6                         | 4879                  | 0.92                              | 1.6                                 | 22.4                                                 | 516                                     | 2190                    |
| 280                        | M3BJ 355LKB                    | 3GBJ356820-_DG707          | 475                   | 95.9                         | 6215                  | 0.96                              | 1.5                                 | 28.5                                                 | 516                                     | 2670                    |
| 333                        | M3BJ 400LC                     | 3GBJ406530-_DG707          | 607                   | 96.4                         | 7387                  | 0.89                              | 1.6                                 | 41.1                                                 | 516                                     | 3260                    |
| 2)                         | AMZ 0500L_10 RAM               |                            |                       |                              |                       |                                   |                                     |                                                      |                                         |                         |
| 2)                         | AMZ 0560L_10 RAM               |                            |                       |                              |                       |                                   |                                     |                                                      |                                         |                         |
| n <sub>n</sub> = 600 r/min |                                |                            |                       |                              |                       |                                   |                                     |                                                      |                                         |                         |
| 67                         | M3BJ 280SMB                    | 3GBJ286220-_DG708          | 125                   | 94.4                         | 1068                  | 0.89                              | 1.2                                 | 2.2                                                  | 720                                     | 650                     |
| 100                        | M3BJ 315SMC                    | 3GBJ316230-_DG708          | 177                   | 95.1                         | 1591                  | 0.93                              | 1.2                                 | 3.9                                                  | 720                                     | 880                     |
| 132                        | M3BJ 315MLA                    | 3GBJ316410-_DG708          | 226                   | 95.6                         | 2100                  | 0.95                              | 1.3                                 | 5.8                                                  | 720                                     | 1115                    |
| 160                        | M3BJ 315LKB                    | 3GBJ316820-_DG708          | 290                   | 95.7                         | 2545                  | 0.90                              | 1.5                                 | 7.8                                                  | 720                                     | 1415                    |
| 200                        | M3BJ 315LKC                    | 3GBJ316830-_DG708          | 341                   | 95.9                         | 3182                  | 0.95                              | 1.4                                 | 9.8                                                  | 720                                     | 1590                    |
| 200                        | M3BJ 355SMB                    | 3GBJ356220-_DG708          | 344                   | 95.9                         | 3181                  | 0.95                              | 1.7                                 | 17.1                                                 | 720                                     | 1765                    |
| 335                        | M3BJ 355MLB                    | 3GBJ356420-_DG708          | 571                   | 96.2                         | 5327                  | 0.95                              | 1.4                                 | 22.4                                                 | 720                                     | 2190                    |
| 355                        | M3BJ 355LKB                    | 3GBJ356820-_DG708          | 578                   | 96.3                         | 5643                  | 0.99                              | 1.5                                 | 28.5                                                 | 720                                     | 2670                    |
| 470                        | M3BJ 400LC                     | 3GBJ406530-_DG708          | 782                   | 96.9                         | 7472                  | 0.97                              | 1.4                                 | 41.1                                                 | 720                                     | 3260                    |
| 2)                         | AMZ 0500L_10 RAM               |                            |                       |                              |                       |                                   |                                     |                                                      |                                         |                         |
| 2)                         | AMZ 0560L_10 RAM               |                            |                       |                              |                       |                                   |                                     |                                                      |                                         |                         |

<sup>1)</sup> See ordering information - section for details on motor type and product code

<sup>2)</sup> Performance values for IEC frame sizes 500 and 560 on request

<sup>3)</sup>  $T_{max}/T_n$  value represents maximum short time overloadability with inverter supply. This does not represent the pull-out torque value according to IEC.

# Permanent magnet synchronous motors

## 460 V Technical data

### IC 411: Self ventilated motors

Loadability according to Figure 1 on page 6

Network voltage 460 V, at motor terminals 426 V

| Output<br>kW                        | Type designation <sup>1)</sup> | Product code <sup>1)</sup> | Current<br>$I_N$<br>A | Efficiency<br>Full load<br>% | Torque<br>$T_N$<br>Nm | Power<br>factor<br>$\cos \varphi$ | Torque<br>$\frac{T_{max}}{T_N^{3)}$ | Moment<br>of inertia<br>$J=1/4GD^2$<br>kgm <sup>2</sup> | Maximum<br>speed,<br>$n_{max}$<br>r/min | Weight<br>approx.<br>kg |
|-------------------------------------|--------------------------------|----------------------------|-----------------------|------------------------------|-----------------------|-----------------------------------|-------------------------------------|---------------------------------------------------------|-----------------------------------------|-------------------------|
| <b><math>n_n = 146</math> r/min</b> |                                |                            |                       |                              |                       |                                   |                                     |                                                         |                                         |                         |
| 13                                  | M3BJ 280SMB                    | 3GBJ286220-_DG705          | 22                    | 87.6                         | 830                   | 0.92                              | 1.4                                 | 2.2                                                     | 175                                     | 650                     |
| 19                                  | M3BJ 315SMC                    | 3GBJ316230-_DG705          | 32                    | 89.3                         | 1246                  | 0.91                              | 1.5                                 | 3.9                                                     | 175                                     | 880                     |
| 29                                  | M3BJ 315MLA                    | 3GBJ316410-_DG705          | 46                    | 90.8                         | 1861                  | 0.93                              | 1.5                                 | 5.8                                                     | 175                                     | 1115                    |
| 35                                  | M3BJ 315LKB                    | 3GBJ316820-_DG705          | 54                    | 91.6                         | 2275                  | 0.96                              | 1.5                                 | 7.8                                                     | 175                                     | 1415                    |
| 47                                  | M3BJ 315LKC                    | 3GBJ316830-_DG705          | 76                    | 91.9                         | 3098                  | 0.93                              | 1.5                                 | 9.8                                                     | 175                                     | 1590                    |
| 47                                  | M3BJ 355SMB                    | 3GBJ356220-_DG705          | 73                    | 92.0                         | 3086                  | 0.96                              | 1.7                                 | 17.1                                                    | 175                                     | 1765                    |
| 63                                  | M3BJ 355MLB                    | 3GBJ356420-_DG705          | 97                    | 92.5                         | 4112                  | 0.95                              | 1.7                                 | 22.4                                                    | 175                                     | 2190                    |
| 79                                  | M3BJ 355LKB                    | 3GBJ356820-_DG705          | 117                   | 93.0                         | 5148                  | 0.98                              | 1.7                                 | 28.5                                                    | 175                                     | 2670                    |
| 95                                  | M3BJ 400LC                     | 3GBJ406530-_DG705          | 139                   | 94.0                         | 6197                  | 0.99                              | 1.6                                 | 41.1                                                    | 175                                     | 3260                    |
| 2) AMZ 0500L_10 RAM                 |                                |                            |                       |                              |                       |                                   |                                     |                                                         |                                         |                         |
| 2) AMZ 0560L_10 RAM                 |                                |                            |                       |                              |                       |                                   |                                     |                                                         |                                         |                         |
| <b><math>n_n = 199</math> r/min</b> |                                |                            |                       |                              |                       |                                   |                                     |                                                         |                                         |                         |
| 19                                  | M3BJ 280SMB                    | 3GBJ286220-_DG706          | 31                    | 89.6                         | 912                   | 0.92                              | 1.3                                 | 2.2                                                     | 239                                     | 650                     |
| 28                                  | M3BJ 315SMC                    | 3GBJ316230-_DG706          | 46                    | 91.0                         | 1364                  | 0.93                              | 1.4                                 | 3.9                                                     | 239                                     | 880                     |
| 40                                  | M3BJ 315MLA                    | 3GBJ316410-_DG706          | 62                    | 92.3                         | 1908                  | 0.95                              | 1.4                                 | 5.8                                                     | 239                                     | 1115                    |
| 51                                  | M3BJ 315LKB                    | 3GBJ316820-_DG706          | 80                    | 93.2                         | 2422                  | 0.92                              | 1.5                                 | 7.8                                                     | 239                                     | 1415                    |
| 63                                  | M3BJ 315LKC                    | 3GBJ316830-_DG706          | 101                   | 93.3                         | 3026                  | 0.91                              | 1.6                                 | 9.8                                                     | 239                                     | 1590                    |
| 63                                  | M3BJ 355SMB                    | 3GBJ356220-_DG706          | 95                    | 93.6                         | 3016                  | 0.96                              | 1.8                                 | 17.1                                                    | 239                                     | 1765                    |
| 94                                  | M3BJ 355MLB                    | 3GBJ356420-_DG706          | 142                   | 93.9                         | 4521                  | 0.96                              | 1.6                                 | 22.4                                                    | 239                                     | 2190                    |
| 116                                 | M3BJ 355LKB                    | 3GBJ356820-_DG706          | 176                   | 94.2                         | 5573                  | 0.95                              | 1.7                                 | 28.5                                                    | 239                                     | 2670                    |
| 139                                 | M3BJ 400LC                     | 3GBJ406530-_DG706          | 203                   | 95.0                         | 6660                  | 0.98                              | 1.5                                 | 41.1                                                    | 239                                     | 3260                    |
| 2) AMZ 0500L_10 RAM                 |                                |                            |                       |                              |                       |                                   |                                     |                                                         |                                         |                         |
| 2) AMZ 0560L_10 RAM                 |                                |                            |                       |                              |                       |                                   |                                     |                                                         |                                         |                         |
| <b><math>n_n = 253</math> r/min</b> |                                |                            |                       |                              |                       |                                   |                                     |                                                         |                                         |                         |
| 23                                  | M3BJ 280SMB                    | 3GBJ286220-_DG705          | 38                    | 90.8                         | 857                   | 0.89                              | 1.3                                 | 2.2                                                     | 304                                     | 650                     |
| 34                                  | M3BJ 315SMC                    | 3GBJ316230-_DG705          | 57                    | 92.2                         | 1286                  | 0.89                              | 1.5                                 | 3.9                                                     | 304                                     | 880                     |
| 51                                  | M3BJ 315MLA                    | 3GBJ316410-_DG705          | 81                    | 93.2                         | 1920                  | 0.91                              | 1.4                                 | 5.8                                                     | 304                                     | 1115                    |
| 62                                  | M3BJ 315LKB                    | 3GBJ316820-_DG705          | 94                    | 93.6                         | 2338                  | 0.95                              | 1.5                                 | 7.8                                                     | 304                                     | 1415                    |
| 84                                  | M3BJ 315LKC                    | 3GBJ316830-_DG705          | 134                   | 93.9                         | 3182                  | 0.91                              | 1.5                                 | 9.8                                                     | 304                                     | 1590                    |
| 84                                  | M3BJ 355SMB                    | 3GBJ356220-_DG705          | 128                   | 94.0                         | 3171                  | 0.95                              | 1.7                                 | 17.1                                                    | 304                                     | 1765                    |
| 112                                 | M3BJ 355MLB                    | 3GBJ356420-_DG705          | 172                   | 94.2                         | 4225                  | 0.94                              | 1.7                                 | 22.4                                                    | 304                                     | 2190                    |
| 140                                 | M3BJ 355LKB                    | 3GBJ356820-_DG705          | 206                   | 94.6                         | 5272                  | 0.97                              | 1.7                                 | 28.5                                                    | 304                                     | 2670                    |
| 168                                 | M3BJ 400LC                     | 3GBJ406530-_DG705          | 245                   | 95.4                         | 6352                  | 0.98                              | 1.6                                 | 41.1                                                    | 304                                     | 3260                    |
| 2) AMZ 0500L_10 RAM                 |                                |                            |                       |                              |                       |                                   |                                     |                                                         |                                         |                         |
| 2) AMZ 0560L_10 RAM                 |                                |                            |                       |                              |                       |                                   |                                     |                                                         |                                         |                         |
| <b><math>n_n = 286</math> r/min</b> |                                |                            |                       |                              |                       |                                   |                                     |                                                         |                                         |                         |
| 29                                  | M3BJ 280SMB                    | 3GBJ286220-_DG707          | 46                    | 91.6                         | 954                   | 0.93                              | 1.3                                 | 2.2                                                     | 343                                     | 650                     |
| 40                                  | M3BJ 315SMC                    | 3GBJ316230-_DG707          | 61                    | 93.0                         | 1332                  | 0.95                              | 1.4                                 | 3.9                                                     | 343                                     | 880                     |
| 63                                  | M3BJ 315MLA                    | 3GBJ316410-_DG707          | 98                    | 93.8                         | 2111                  | 0.93                              | 1.4                                 | 5.8                                                     | 343                                     | 1115                    |
| 79                                  | M3BJ 315LKB                    | 3GBJ316820-_DG707          | 121                   | 94.3                         | 2640                  | 0.94                              | 1.4                                 | 7.8                                                     | 343                                     | 1415                    |
| 101                                 | M3BJ 315LKC                    | 3GBJ316830-_DG707          | 154                   | 94.6                         | 3379                  | 0.94                              | 1.4                                 | 9.8                                                     | 343                                     | 1590                    |
| 95                                  | M3BJ 355SMB                    | 3GBJ356220-_DG707          | 137                   | 94.6                         | 3162                  | 0.99                              | 1.6                                 | 17.1                                                    | 343                                     | 1765                    |
| 138                                 | M3BJ 355MLB                    | 3GBJ356420-_DG707          | 214                   | 95.0                         | 4615                  | 0.92                              | 1.7                                 | 22.4                                                    | 343                                     | 2190                    |
| 176                                 | M3BJ 355LKB                    | 3GBJ356820-_DG707          | 260                   | 95.2                         | 5885                  | 0.96                              | 1.6                                 | 28.5                                                    | 343                                     | 2670                    |
| 211                                 | M3BJ 400LC                     | 3GBJ406530-_DG707          | 335                   | 95.8                         | 7057                  | 0.89                              | 1.6                                 | 41.1                                                    | 343                                     | 3260                    |
| 2) AMZ 0500L_10 RAM                 |                                |                            |                       |                              |                       |                                   |                                     |                                                         |                                         |                         |
| 2) AMZ 0560L_10 RAM                 |                                |                            |                       |                              |                       |                                   |                                     |                                                         |                                         |                         |

<sup>1)</sup> See ordering information - section for details on motor type and product code

<sup>2)</sup> Performance values for IEC frame sizes 500 and 560 on request

<sup>3)</sup>  $T_{max}/T_n$  value represents maximum short time overloadability with inverter supply. This does not represent the pull-out torque value according to IEC.

# Permanent magnet synchronous motors

## 460 V Technical data

### IC 411: Self ventilated motors

Loadability according to Figure 1 on page 6

Network voltage 460 V, at motor terminals 426 V

| Output<br>kW                        | Type designation <sup>1)</sup> | Product code <sup>1)</sup> | Current<br>$I_N$<br>A | Efficiency<br>Full load<br>% | Torque<br>$T_N$<br>Nm | Power<br>factor<br>$\cos \varphi$ | Torque<br>$\frac{T_{max}}{T_N}$ <sup>3)</sup> | Moment<br>of inertia<br>$J=1/4GD^2$<br>kgm <sup>2</sup> | Maximum<br>speed,<br>$n_{max}$<br>r/min | Weight<br>approx.<br>kg |
|-------------------------------------|--------------------------------|----------------------------|-----------------------|------------------------------|-----------------------|-----------------------------------|-----------------------------------------------|---------------------------------------------------------|-----------------------------------------|-------------------------|
| <b><math>n_n = 345</math> r/min</b> |                                |                            |                       |                              |                       |                                   |                                               |                                                         |                                         |                         |
| 34                                  | M3BJ 280SMB                    | 3GBJ286220-_DG706          | 56                    | 92.4                         | 940                   | 0.90                              | 1.3                                           | 2.2                                                     | 414                                     | 650                     |
| 51                                  | M3BJ 315SMC                    | 3GBJ316230-_DG706          | 81                    | 93.6                         | 1405                  | 0.91                              | 1.4                                           | 3.9                                                     | 414                                     | 880                     |
| 71                                  | M3BJ 315MLA                    | 3GBJ316410-_DG706          | 109                   | 94.3                         | 1956                  | 0.93                              | 1.4                                           | 5.8                                                     | 414                                     | 1115                    |
| 89                                  | M3BJ 315LKB                    | 3GBJ316820-_DG706          | 140                   | 94.6                         | 2462                  | 0.91                              | 1.5                                           | 7.8                                                     | 414                                     | 1415                    |
| 111                                 | M3BJ 315LKC                    | 3GBJ316830-_DG706          | 177                   | 94.8                         | 3064                  | 0.90                              | 1.5                                           | 9.8                                                     | 414                                     | 1590                    |
| 111                                 | M3BJ 355SMB                    | 3GBJ356220-_DG706          | 166                   | 94.9                         | 3067                  | 0.95                              | 1.7                                           | 17.1                                                    | 414                                     | 1765                    |
| 168                                 | M3BJ 355MLB                    | 3GBJ356420-_DG706          | 251                   | 95.2                         | 4636                  | 0.95                              | 1.6                                           | 22.4                                                    | 414                                     | 2190                    |
| 204                                 | M3BJ 355LKB                    | 3GBJ356820-_DG706          | 308                   | 95.4                         | 5642                  | 0.94                              | 1.7                                           | 28.5                                                    | 414                                     | 2670                    |
| 246                                 | M3BJ 400LC                     | 3GBJ406530-_DG706          | 357                   | 96.1                         | 6805                  | 0.97                              | 1.5                                           | 41.1                                                    | 414                                     | 3260                    |
| 3) AMZ 0500L_10 RAM                 |                                |                            |                       |                              |                       |                                   |                                               |                                                         |                                         |                         |
| 3) AMZ 0560L_10 RAM                 |                                |                            |                       |                              |                       |                                   |                                               |                                                         |                                         |                         |
| <b><math>n_n = 398</math> r/min</b> |                                |                            |                       |                              |                       |                                   |                                               |                                                         |                                         |                         |
| 43                                  | M3BJ 280SMB                    | 3GBJ286220-_DG708          | 69                    | 93.4                         | 1018                  | 0.90                              | 1.3                                           | 2.2                                                     | 478                                     | 650                     |
| 63                                  | M3BJ 315SMC                    | 3GBJ316230-_DG708          | 97                    | 94.3                         | 1514                  | 0.94                              | 1.3                                           | 3.9                                                     | 478                                     | 880                     |
| 83                                  | M3BJ 315MLA                    | 3GBJ316410-_DG708          | 124                   | 94.9                         | 2000                  | 0.96                              | 1.4                                           | 5.8                                                     | 478                                     | 1115                    |
| 101                                 | M3BJ 315LKB                    | 3GBJ316820-_DG708          | 159                   | 95.3                         | 2418                  | 0.90                              | 1.6                                           | 7.8                                                     | 478                                     | 1415                    |
| 126                                 | M3BJ 315LKC                    | 3GBJ316830-_DG708          | 187                   | 95.4                         | 3028                  | 0.96                              | 1.5                                           | 9.8                                                     | 478                                     | 1590                    |
| 126                                 | M3BJ 355SMB                    | 3GBJ356220-_DG708          | 188                   | 95.4                         | 3011                  | 0.95                              | 1.8                                           | 17.1                                                    | 478                                     | 1765                    |
| 211                                 | M3BJ 355MLB                    | 3GBJ356420-_DG708          | 312                   | 95.7                         | 5046                  | 0.96                              | 1.5                                           | 22.4                                                    | 478                                     | 2190                    |
| 224                                 | M3BJ 355LKB                    | 3GBJ356820-_DG708          | 318                   | 95.8                         | 5361                  | 1.00                              | 1.6                                           | 28.5                                                    | 478                                     | 2670                    |
| 297                                 | M3BJ 400LC                     | 3GBJ406530-_DG708          | 429                   | 96.5                         | 7109                  | 0.97                              | 1.5                                           | 41.1                                                    | 478                                     | 3260                    |
| 2) AMZ 0500L_10 RAM                 |                                |                            |                       |                              |                       |                                   |                                               |                                                         |                                         |                         |
| 2) AMZ 0560L_10 RAM                 |                                |                            |                       |                              |                       |                                   |                                               |                                                         |                                         |                         |
| <b><math>n_n = 495</math> r/min</b> |                                |                            |                       |                              |                       |                                   |                                               |                                                         |                                         |                         |
| 51                                  | M3BJ 280SMB                    | 3GBJ286220-_DG707          | 80                    | 93.7                         | 978                   | 0.91                              | 1.2                                           | 2.2                                                     | 594                                     | 650                     |
| 70                                  | M3BJ 315SMC                    | 3GBJ316230-_DG707          | 107                   | 94.6                         | 1360                  | 0.94                              | 1.4                                           | 3.9                                                     | 594                                     | 880                     |
| 111                                 | M3BJ 315MLA                    | 3GBJ316410-_DG707          | 173                   | 95.1                         | 2152                  | 0.92                              | 1.3                                           | 5.8                                                     | 594                                     | 1115                    |
| 139                                 | M3BJ 315LKB                    | 3GBJ316820-_DG707          | 212                   | 95.4                         | 2677                  | 0.93                              | 1.4                                           | 7.8                                                     | 594                                     | 1415                    |
| 177                                 | M3BJ 315LKC                    | 3GBJ316830-_DG707          | 268                   | 95.6                         | 3411                  | 0.93                              | 1.4                                           | 9.8                                                     | 594                                     | 1590                    |
| 165                                 | M3BJ 355SMB                    | 3GBJ356220-_DG707          | 237                   | 95.6                         | 3180                  | 0.99                              | 1.6                                           | 17.1                                                    | 594                                     | 1765                    |
| 240                                 | M3BJ 355MLB                    | 3GBJ356420-_DG707          | 373                   | 95.8                         | 4628                  | 0.91                              | 1.7                                           | 22.4                                                    | 594                                     | 2190                    |
| 305                                 | M3BJ 355LKB                    | 3GBJ356820-_DG707          | 450                   | 96.0                         | 5896                  | 0.96                              | 1.6                                           | 28.5                                                    | 594                                     | 2670                    |
| 359                                 | M3BJ 400LC                     | 3GBJ406530-_DG707          | 572                   | 96.5                         | 6930                  | 0.88                              | 1.7                                           | 41.1                                                    | 594                                     | 3260                    |
| 2) AMZ 0500L_10 RAM                 |                                |                            |                       |                              |                       |                                   |                                               |                                                         |                                         |                         |
| 2) AMZ 0560L_10 RAM                 |                                |                            |                       |                              |                       |                                   |                                               |                                                         |                                         |                         |
| <b><math>n_n = 690</math> r/min</b> |                                |                            |                       |                              |                       |                                   |                                               |                                                         |                                         |                         |
| 74                                  | M3BJ 280SMB                    | 3GBJ286220-_DG708          | 120                   | 94.5                         | 1030                  | 0.89                              | 1.2                                           | 2.2                                                     | 828                                     | 650                     |
| 111                                 | M3BJ 315SMC                    | 3GBJ316230-_DG708          | 170                   | 95.3                         | 1533                  | 0.93                              | 1.3                                           | 3.9                                                     | 828                                     | 880                     |
| 145                                 | M3BJ 315MLA                    | 3GBJ316410-_DG708          | 215                   | 95.8                         | 2009                  | 0.96                              | 1.4                                           | 5.8                                                     | 828                                     | 1115                    |
| 171                                 | M3BJ 315LKB                    | 3GBJ316820-_DG708          | 271                   | 95.8                         | 2369                  | 0.90                              | 1.6                                           | 7.8                                                     | 828                                     | 1415                    |
| 215                                 | M3BJ 315LKC                    | 3GBJ316830-_DG708          | 319                   | 95.9                         | 2980                  | 0.96                              | 1.5                                           | 9.8                                                     | 828                                     | 1590                    |
| 211                                 | M3BJ 355SMB                    | 3GBJ356220-_DG708          | 317                   | 95.9                         | 2917                  | 0.94                              | 1.9                                           | 17.1                                                    | 828                                     | 1765                    |
| 365                                 | M3BJ 355MLB                    | 3GBJ356420-_DG708          | 540                   | 96.3                         | 5048                  | 0.95                              | 1.5                                           | 22.4                                                    | 828                                     | 2190                    |
| 382                                 | M3BJ 355LKB                    | 3GBJ356820-_DG708          | 540                   | 96.3                         | 5286                  | 1.00                              | 1.6                                           | 28.5                                                    | 828                                     | 2670                    |
| 513                                 | M3BJ 400LC                     | 3GBJ406530-_DG708          | 740                   | 97.0                         | 7094                  | 0.97                              | 1.5                                           | 41.1                                                    | 828                                     | 3260                    |
| 2) AMZ 0500L_10 RAM                 |                                |                            |                       |                              |                       |                                   |                                               |                                                         |                                         |                         |
| 2) AMZ 0560L_10 RAM                 |                                |                            |                       |                              |                       |                                   |                                               |                                                         |                                         |                         |

<sup>1)</sup> See ordering information - section for details on motor type and product code

<sup>2)</sup> Performance values for IEC frame sizes 500 and 560 on request

<sup>3)</sup>  $T_{max}/T_n$  value represents maximum short time overloadability with inverter supply. This does not represent the pull-out torque value according to IEC.

# Permanent magnet synchronous motors

## 500 V Technical data

### IC 411: Self ventilated motors

Loadability according to Figure 1 on page 6

Network voltage 500 V, at motor terminals 463 V

| Output<br>kW               | Type designation <sup>1)</sup> | Product code <sup>1)</sup> | Current<br><br>$I_N$<br>A | Efficiency<br>Full load<br>% | Torque<br><br>$T_N$<br>Nm | Power<br>factor<br>$\cos \varphi$ | Torque<br><br>$\frac{T_{max}}{T_N^{(3)}}$ | Moment<br>of inertia<br>$J=1/4GD^2$<br>kgm <sup>2</sup> | Maximum<br>speed,<br>$n_{max}$<br>r/min | Weight<br>approx.<br>kg |
|----------------------------|--------------------------------|----------------------------|---------------------------|------------------------------|---------------------------|-----------------------------------|-------------------------------------------|---------------------------------------------------------|-----------------------------------------|-------------------------|
| n <sub>n</sub> = 159 r/min |                                |                            |                           |                              |                           |                                   |                                           |                                                         |                                         |                         |
| 14                         | M3BJ 280SMB                    | 3GBJ286220-_DG705          | 22                        | 88.0                         | 838                       | 0.91                              | 1.4                                       | 2.2                                                     | 191                                     | 650                     |
| 21                         | M3BJ 315SMC                    | 3GBJ316230-_DG705          | 32                        | 89.7                         | 1258                      | 0.91                              | 1.5                                       | 3.9                                                     | 191                                     | 880                     |
| 31                         | M3BJ 315MLA                    | 3GBJ316410-_DG705          | 46                        | 91.0                         | 1879                      | 0.93                              | 1.5                                       | 5.8                                                     | 191                                     | 1115                    |
| 38                         | M3BJ 315LKB                    | 3GBJ316820-_DG705          | 54                        | 92.0                         | 2298                      | 0.96                              | 1.5                                       | 7.8                                                     | 191                                     | 1415                    |
| 52                         | M3BJ 315LKC                    | 3GBJ316830-_DG705          | 76                        | 92.2                         | 3130                      | 0.92                              | 1.5                                       | 9.8                                                     | 191                                     | 1590                    |
| 52                         | M3BJ 355SMB                    | 3GBJ356220-_DG705          | 73                        | 92.5                         | 3120                      | 0.96                              | 1.7                                       | 17.1                                                    | 191                                     | 1765                    |
| 69                         | M3BJ 355MLB                    | 3GBJ356420-_DG705          | 98                        | 92.8                         | 4158                      | 0.95                              | 1.7                                       | 22.4                                                    | 191                                     | 2190                    |
| 87                         | M3BJ 355LKB                    | 3GBJ356820-_DG705          | 118                       | 93.3                         | 5204                      | 0.98                              | 1.7                                       | 28.5                                                    | 191                                     | 2670                    |
| 104                        | M3BJ 400LC                     | 3GBJ406530-_DG705          | 140                       | 94.2                         | 6261                      | 0.98                              | 1.6                                       | 41.1                                                    | 191                                     | 3260                    |
| 2)                         | AMZ 0500L_10 RAM               |                            |                           |                              |                           |                                   |                                           |                                                         |                                         |                         |
| 2)                         | AMZ 0560L_10 RAM               |                            |                           |                              |                           |                                   |                                           |                                                         |                                         |                         |
| n <sub>n</sub> = 217 r/min |                                |                            |                           |                              |                           |                                   |                                           |                                                         |                                         |                         |
| 21                         | M3BJ 280SMB                    | 3GBJ286220-_DG706          | 32                        | 90.5                         | 920                       | 0.91                              | 1.3                                       | 2.2                                                     | 260                                     | 650                     |
| 31                         | M3BJ 315SMC                    | 3GBJ316230-_DG706          | 46                        | 91.5                         | 1377                      | 0.92                              | 1.4                                       | 3.9                                                     | 260                                     | 880                     |
| 44                         | M3BJ 315MLA                    | 3GBJ316410-_DG706          | 62                        | 92.8                         | 1928                      | 0.94                              | 1.4                                       | 5.8                                                     | 260                                     | 1115                    |
| 56                         | M3BJ 315LKB                    | 3GBJ316820-_DG706          | 80                        | 93.4                         | 2447                      | 0.92                              | 1.5                                       | 7.8                                                     | 260                                     | 1415                    |
| 69                         | M3BJ 315LKC                    | 3GBJ316830-_DG706          | 102                       | 93.6                         | 3058                      | 0.91                              | 1.5                                       | 9.8                                                     | 260                                     | 1590                    |
| 69                         | M3BJ 355SMB                    | 3GBJ356220-_DG706          | 96                        | 93.8                         | 3050                      | 0.96                              | 1.8                                       | 17.1                                                    | 260                                     | 1765                    |
| 104                        | M3BJ 355MLB                    | 3GBJ356420-_DG706          | 143                       | 94.1                         | 4572                      | 0.96                              | 1.6                                       | 22.4                                                    | 260                                     | 2190                    |
| 128                        | M3BJ 355LKB                    | 3GBJ356820-_DG706          | 178                       | 94.5                         | 5636                      | 0.95                              | 1.7                                       | 28.5                                                    | 260                                     | 2670                    |
| 153                        | M3BJ 400LC                     | 3GBJ406530-_DG706          | 205                       | 95.3                         | 6730                      | 0.98                              | 1.5                                       | 41.1                                                    | 260                                     | 3260                    |
| 2)                         | AMZ 0500L_10 RAM               |                            |                           |                              |                           |                                   |                                           |                                                         |                                         |                         |
| 2)                         | AMZ 0560L_10 RAM               |                            |                           |                              |                           |                                   |                                           |                                                         |                                         |                         |
| n <sub>n</sub> = 275 r/min |                                |                            |                           |                              |                           |                                   |                                           |                                                         |                                         |                         |
| 24                         | M3BJ 280SMB                    | 3GBJ286220-_DG705          | 38                        | 91.4                         | 844                       | 0.88                              | 1.4                                       | 2.2                                                     | 330                                     | 650                     |
| 36                         | M3BJ 315SMC                    | 3GBJ316230-_DG705          | 56                        | 92.4                         | 1265                      | 0.89                              | 1.5                                       | 3.9                                                     | 330                                     | 880                     |
| 54                         | M3BJ 315MLA                    | 3GBJ316410-_DG705          | 80                        | 93.5                         | 1886                      | 0.91                              | 1.5                                       | 5.8                                                     | 330                                     | 1115                    |
| 66                         | M3BJ 315LKB                    | 3GBJ316820-_DG705          | 92                        | 94.0                         | 2291                      | 0.95                              | 1.5                                       | 7.8                                                     | 330                                     | 1415                    |
| 90                         | M3BJ 315LKC                    | 3GBJ316830-_DG705          | 131                       | 94.1                         | 3115                      | 0.91                              | 1.5                                       | 9.8                                                     | 330                                     | 1590                    |
| 89                         | M3BJ 355SMB                    | 3GBJ356220-_DG705          | 126                       | 94.2                         | 3096                      | 0.94                              | 1.7                                       | 17.1                                                    | 330                                     | 1765                    |
| 119                        | M3BJ 355MLB                    | 3GBJ356420-_DG705          | 168                       | 94.4                         | 4120                      | 0.93                              | 1.7                                       | 22.4                                                    | 330                                     | 2190                    |
| 148                        | M3BJ 355LKB                    | 3GBJ356820-_DG705          | 200                       | 94.9                         | 5145                      | 0.97                              | 1.7                                       | 28.5                                                    | 330                                     | 2670                    |
| 179                        | M3BJ 400LC                     | 3GBJ406530-_DG705          | 239                       | 95.6                         | 6210                      | 0.98                              | 1.6                                       | 41.1                                                    | 330                                     | 3260                    |
| 2)                         | AMZ 0500L_10 RAM               |                            |                           |                              |                           |                                   |                                           |                                                         |                                         |                         |
| 2)                         | AMZ 0560L_10 RAM               |                            |                           |                              |                           |                                   |                                           |                                                         |                                         |                         |
| n <sub>n</sub> = 310 r/min |                                |                            |                           |                              |                           |                                   |                                           |                                                         |                                         |                         |
| 31                         | M3BJ 280SMB                    | 3GBJ286220-_DG707          | 46                        | 92.1                         | 964                       | 0.92                              | 1.3                                       | 2.2                                                     | 372                                     | 650                     |
| 44                         | M3BJ 315SMC                    | 3GBJ316230-_DG707          | 62                        | 93.4                         | 1346                      | 0.95                              | 1.4                                       | 3.9                                                     | 372                                     | 880                     |
| 69                         | M3BJ 315MLA                    | 3GBJ316410-_DG707          | 99                        | 94.0                         | 2134                      | 0.93                              | 1.4                                       | 5.8                                                     | 372                                     | 1115                    |
| 87                         | M3BJ 315LKB                    | 3GBJ316820-_DG707          | 122                       | 94.5                         | 2668                      | 0.94                              | 1.4                                       | 7.8                                                     | 372                                     | 1415                    |
| 111                        | M3BJ 315LKC                    | 3GBJ316830-_DG707          | 156                       | 94.8                         | 3415                      | 0.94                              | 1.4                                       | 9.8                                                     | 372                                     | 1590                    |
| 104                        | M3BJ 355SMB                    | 3GBJ356220-_DG707          | 138                       | 94.8                         | 3196                      | 0.99                              | 1.6                                       | 17.1                                                    | 372                                     | 1765                    |
| 152                        | M3BJ 355MLB                    | 3GBJ356420-_DG707          | 217                       | 95.2                         | 4669                      | 0.92                              | 1.7                                       | 22.4                                                    | 372                                     | 2190                    |
| 193                        | M3BJ 355LKB                    | 3GBJ356820-_DG707          | 263                       | 95.4                         | 5952                      | 0.96                              | 1.6                                       | 28.5                                                    | 372                                     | 2670                    |
| 232                        | M3BJ 400LC                     | 3GBJ406530-_DG707          | 339                       | 95.9                         | 7134                      | 0.89                              | 1.6                                       | 41.1                                                    | 372                                     | 3260                    |
| 2)                         | AMZ 0500L_10 RAM               |                            |                           |                              |                           |                                   |                                           |                                                         |                                         |                         |
| 2)                         | AMZ 0560L_10 RAM               |                            |                           |                              |                           |                                   |                                           |                                                         |                                         |                         |

<sup>1)</sup> See ordering information - section for details on motor type and product code

<sup>2)</sup> Performance values for IEC frame sizes 500 and 560 on request

<sup>3)</sup>  $T_{max}/T_n$  value represents maximum short time overloadability with inverter supply. This does not represent the pull-out torque according to IEC.

# Permanent magnet synchronous motors

## 500 V Technical data

### IC 411: Self ventilated motors

Loadability according to Figure 1 on page 6

Network voltage 500 V, at motor terminals 463 V

| Output<br>kW                        | Type designation <sup>1)</sup> | Product code <sup>1)</sup> | Current<br>$I_N$<br>A | Efficiency<br>Full load<br>% | Torque<br>$T_N$<br>Nm | Power<br>factor<br>$\cos \varphi$ | Torque<br>$\frac{T_{max}}{T_N^{3)}$ | Moment<br>of inertia<br>$J=1/4GD^2$<br>kgm <sup>2</sup> | Maximum<br>speed,<br>$n_{max}$<br>r/min | Weight<br>approx.<br>kg |
|-------------------------------------|--------------------------------|----------------------------|-----------------------|------------------------------|-----------------------|-----------------------------------|-------------------------------------|---------------------------------------------------------|-----------------------------------------|-------------------------|
| <b><math>n_n = 375</math> r/min</b> |                                |                            |                       |                              |                       |                                   |                                     |                                                         |                                         |                         |
| 36                                  | M3BJ 280SMB                    | 3GBJ286220-_DG706          | 55                    | 92.8                         | 924                   | 0.90                              | 1.3                                 | 2.2                                                     | 450                                     | 650                     |
| 54                                  | M3BJ 315SMC                    | 3GBJ316230-_DG706          | 80                    | 93.8                         | 1379                  | 0.91                              | 1.4                                 | 3.9                                                     | 450                                     | 880                     |
| 75                                  | M3BJ 315MLA                    | 3GBJ316410-_DG706          | 106                   | 94.5                         | 1913                  | 0.93                              | 1.4                                 | 5.8                                                     | 450                                     | 1115                    |
| 94                                  | M3BJ 315LKB                    | 3GBJ316820-_DG706          | 136                   | 94.8                         | 2392                  | 0.91                              | 1.6                                 | 7.8                                                     | 450                                     | 1415                    |
| 117                                 | M3BJ 315LKC                    | 3GBJ316830-_DG706          | 172                   | 94.9                         | 2969                  | 0.89                              | 1.6                                 | 9.8                                                     | 450                                     | 1590                    |
| 116                                 | M3BJ 355SMB                    | 3GBJ356220-_DG706          | 161                   | 94.9                         | 2965                  | 0.95                              | 1.8                                 | 17.1                                                    | 450                                     | 1765                    |
| 177                                 | M3BJ 355MLB                    | 3GBJ356420-_DG706          | 243                   | 95.4                         | 4504                  | 0.95                              | 1.6                                 | 22.4                                                    | 450                                     | 2190                    |
| 214                                 | M3BJ 355LKB                    | 3GBJ356820-_DG706          | 298                   | 95.5                         | 5454                  | 0.94                              | 1.7                                 | 28.5                                                    | 450                                     | 2670                    |
| 260                                 | M3BJ 400LC                     | 3GBJ406530-_DG706          | 346                   | 96.2                         | 6614                  | 0.97                              | 1.6                                 | 41.1                                                    | 450                                     | 3260                    |
| 2) AMZ 0500L_10 RAM                 |                                |                            |                       |                              |                       |                                   |                                     |                                                         |                                         |                         |
| 2) AMZ 0560L_10 RAM                 |                                |                            |                       |                              |                       |                                   |                                     |                                                         |                                         |                         |
| <b><math>n_n = 433</math> r/min</b> |                                |                            |                       |                              |                       |                                   |                                     |                                                         |                                         |                         |
| 47                                  | M3BJ 280SMB                    | 3GBJ286220-_DG708          | 69                    | 93.4                         | 1028                  | 0.90                              | 1.2                                 | 2.2                                                     | 520                                     | 650                     |
| 69                                  | M3BJ 315SMC                    | 3GBJ316230-_DG708          | 98                    | 94.6                         | 1530                  | 0.93                              | 1.3                                 | 3.9                                                     | 520                                     | 880                     |
| 92                                  | M3BJ 315MLA                    | 3GBJ316410-_DG708          | 125                   | 95.0                         | 2021                  | 0.96                              | 1.4                                 | 5.8                                                     | 520                                     | 1115                    |
| 111                                 | M3BJ 315LKB                    | 3GBJ316820-_DG708          | 161                   | 95.3                         | 2444                  | 0.90                              | 1.6                                 | 7.8                                                     | 520                                     | 1415                    |
| 139                                 | M3BJ 315LKC                    | 3GBJ316830-_DG708          | 189                   | 95.5                         | 3060                  | 0.96                              | 1.5                                 | 9.8                                                     | 520                                     | 1590                    |
| 138                                 | M3BJ 355SMB                    | 3GBJ356220-_DG708          | 190                   | 95.6                         | 3046                  | 0.95                              | 1.8                                 | 17.1                                                    | 520                                     | 1765                    |
| 232                                 | M3BJ 355MLB                    | 3GBJ356420-_DG708          | 316                   | 95.9                         | 5105                  | 0.95                              | 1.5                                 | 22.4                                                    | 520                                     | 2190                    |
| 246                                 | M3BJ 355LKB                    | 3GBJ356820-_DG708          | 321                   | 95.9                         | 5419                  | 1.00                              | 1.6                                 | 28.5                                                    | 520                                     | 2670                    |
| 326                                 | M3BJ 400LC                     | 3GBJ406530-_DG708          | 434                   | 96.6                         | 7185                  | 0.97                              | 1.5                                 | 41.1                                                    | 520                                     | 3260                    |
| 2) AMZ 0500L_10 RAM                 |                                |                            |                       |                              |                       |                                   |                                     |                                                         |                                         |                         |
| 2) AMZ 0560L_10 RAM                 |                                |                            |                       |                              |                       |                                   |                                     |                                                         |                                         |                         |
| <b><math>n_n = 538</math> r/min</b> |                                |                            |                       |                              |                       |                                   |                                     |                                                         |                                         |                         |
| 54                                  | M3BJ 280SMB                    | 3GBJ286220-_DG707          | 79                    | 93.9                         | 956                   | 0.91                              | 1.3                                 | 2.2                                                     | 645                                     | 650                     |
| 75                                  | M3BJ 315SMC                    | 3GBJ316230-_DG707          | 105                   | 94.8                         | 1326                  | 0.94                              | 1.4                                 | 3.9                                                     | 645                                     | 880                     |
| 118                                 | M3BJ 315MLA                    | 3GBJ316410-_DG707          | 168                   | 95.3                         | 2091                  | 0.92                              | 1.4                                 | 5.8                                                     | 645                                     | 1115                    |
| 146                                 | M3BJ 315LKB                    | 3GBJ316820-_DG707          | 205                   | 95.5                         | 2587                  | 0.93                              | 1.5                                 | 7.8                                                     | 645                                     | 1415                    |
| 186                                 | M3BJ 315LKC                    | 3GBJ316830-_DG707          | 259                   | 95.7                         | 3295                  | 0.93                              | 1.4                                 | 9.8                                                     | 645                                     | 1590                    |
| 172                                 | M3BJ 355SMB                    | 3GBJ356220-_DG707          | 228                   | 95.7                         | 3061                  | 0.99                              | 1.7                                 | 17.1                                                    | 645                                     | 1765                    |
| 249                                 | M3BJ 355MLB                    | 3GBJ356420-_DG707          | 357                   | 95.8                         | 4420                  | 0.91                              | 1.8                                 | 22.4                                                    | 645                                     | 2190                    |
| 318                                 | M3BJ 355LKB                    | 3GBJ356820-_DG707          | 431                   | 96.1                         | 5649                  | 0.96                              | 1.7                                 | 28.5                                                    | 645                                     | 2670                    |
| 372                                 | M3BJ 400LC                     | 3GBJ406530-_DG707          | 548                   | 96.5                         | 6612                  | 0.88                              | 1.8                                 | 41.1                                                    | 645                                     | 3260                    |
| 2) AMZ 0500L_10 RAM                 |                                |                            |                       |                              |                       |                                   |                                     |                                                         |                                         |                         |
| 2) AMZ 0560L_10 RAM                 |                                |                            |                       |                              |                       |                                   |                                     |                                                         |                                         |                         |
| <b><math>n_n = 750</math> r/min</b> |                                |                            |                       |                              |                       |                                   |                                     |                                                         |                                         |                         |
| 78                                  | M3BJ 280SMB                    | 3GBJ286220-_DG708          | 116                   | 94.7                         | 997                   | 0.89                              | 1.3                                 | 2.2                                                     | 863                                     | 650                     |
| 117                                 | M3BJ 315SMC                    | 3GBJ316230-_DG708          | 164                   | 95.5                         | 1485                  | 0.93                              | 1.3                                 | 3.9                                                     | 863                                     | 880                     |
| 152                                 | M3BJ 315MLA                    | 3GBJ316410-_DG708          | 206                   | 95.8                         | 1929                  | 0.96                              | 1.4                                 | 5.8                                                     | 863                                     | 1115                    |
| 175                                 | M3BJ 315LKB                    | 3GBJ316820-_DG708          | 255                   | 95.7                         | 2221                  | 0.89                              | 1.7                                 | 7.8                                                     | 863                                     | 1415                    |
| 221                                 | M3BJ 315LKC                    | 3GBJ316830-_DG708          | 301                   | 96.0                         | 2813                  | 0.96                              | 1.6                                 | 9.8                                                     | 863                                     | 1590                    |
| 213                                 | M3BJ 355SMB                    | 3GBJ356220-_DG708          | 296                   | 95.7                         | 2709                  | 0.94                              | 2.0                                 | 17.1                                                    | 863                                     | 1765                    |
| 377                                 | M3BJ 355MLB                    | 3GBJ356420-_DG708          | 513                   | 96.3                         | 4797                  | 0.95                              | 1.6                                 | 22.4                                                    | 863                                     | 2190                    |
| 391                                 | M3BJ 355LKB                    | 3GBJ356820-_DG708          | 509                   | 96.3                         | 4980                  | 1.00                              | 1.7                                 | 28.5                                                    | 863                                     | 2670                    |
| 528                                 | M3BJ 400LC                     | 3GBJ406530-_DG708          | 701                   | 97.0                         | 6728                  | 0.97                              | 1.6                                 | 41.1                                                    | 863                                     | 3260                    |
| 2) AMZ 0500L_10 RAM                 |                                |                            |                       |                              |                       |                                   |                                     |                                                         |                                         |                         |
| 2) AMZ 0560L_10 RAM                 |                                |                            |                       |                              |                       |                                   |                                     |                                                         |                                         |                         |

<sup>1)</sup> See ordering information - section for details on motor type and product code

<sup>2)</sup> Performance values for IEC frame sizes 500 and 560 on request

<sup>3)</sup>  $T_{max}/T_n$  value represents maximum short time overloadability with inverter supply. This does not represent the pull-out torque value according to IEC.

# Permanent magnet synchronous motors

## 575 V Technical data

IC 411: Self ventilated motors

Loadability according to Figure 1 on page 6

Network voltage 575 V, at motor terminals 532 V

| Output<br>kW                        | Type designation <sup>1)</sup> | Product code <sup>1)</sup> | Current<br>$I_N$<br>A | Efficiency<br>Full load<br>% | Torque<br>$T_N$<br>Nm | Power<br>factor<br>$\cos \varphi$ | Torque<br>$\frac{T_{max}}{T_N^{3)}$ | Moment<br>of inertia<br>$J=1/4GD^2$<br>kgm <sup>2</sup> | Maximum<br>speed,<br>$n_{max}$<br>r/min | Weight<br>approx.<br>kg |
|-------------------------------------|--------------------------------|----------------------------|-----------------------|------------------------------|-----------------------|-----------------------------------|-------------------------------------|---------------------------------------------------------|-----------------------------------------|-------------------------|
| <b><math>n_n = 183</math> r/min</b> |                                |                            |                       |                              |                       |                                   |                                     |                                                         |                                         |                         |
| 16                                  | M3BJ 280SMB                    | 3GBJ286220-_DG705          | 22                    | 89.6                         | 850                   | 0.90                              | 1.4                                 | 2.2                                                     | 220                                     | 650                     |
| 24                                  | M3BJ 315SMC                    | 3GBJ316230-_DG705          | 32                    | 90.4                         | 1277                  | 0.90                              | 1.5                                 | 3.9                                                     | 220                                     | 880                     |
| 37                                  | M3BJ 315MLA                    | 3GBJ316410-_DG705          | 47                    | 91.9                         | 1908                  | 0.92                              | 1.4                                 | 5.8                                                     | 220                                     | 1115                    |
| 45                                  | M3BJ 315LKB                    | 3GBJ316820-_DG705          | 55                    | 92.5                         | 2333                  | 0.96                              | 1.5                                 | 7.8                                                     | 220                                     | 1415                    |
| 61                                  | M3BJ 315LKC                    | 3GBJ316830-_DG705          | 77                    | 92.8                         | 3179                  | 0.92                              | 1.5                                 | 9.8                                                     | 220                                     | 1590                    |
| 61                                  | M3BJ 355SMB                    | 3GBJ356220-_DG705          | 74                    | 93.0                         | 3172                  | 0.95                              | 1.7                                 | 17.1                                                    | 220                                     | 1765                    |
| 81                                  | M3BJ 355MLB                    | 3GBJ356420-_DG705          | 100                   | 93.3                         | 4228                  | 0.94                              | 1.7                                 | 22.4                                                    | 220                                     | 2190                    |
| 101                                 | M3BJ 355LKB                    | 3GBJ356820-_DG705          | 120                   | 93.8                         | 5289                  | 0.98                              | 1.6                                 | 28.5                                                    | 220                                     | 2670                    |
| 122                                 | M3BJ 400LC                     | 3GBJ406530-_DG705          | 142                   | 94.6                         | 6360                  | 0.98                              | 1.6                                 | 41.1                                                    | 220                                     | 3260                    |
| <sup>2)</sup> AMZ 0500L_10 RAM      |                                |                            |                       |                              |                       |                                   |                                     |                                                         |                                         |                         |
| <sup>2)</sup> AMZ 0560L_10 RAM      |                                |                            |                       |                              |                       |                                   |                                     |                                                         |                                         |                         |
| <b><math>n_n = 249</math> r/min</b> |                                |                            |                       |                              |                       |                                   |                                     |                                                         |                                         |                         |
| 24                                  | M3BJ 280SMB                    | 3GBJ286220-_DG706          | 32                    | 91.0                         | 934                   | 0.91                              | 1.3                                 | 2.2                                                     | 299                                     | 650                     |
| 37                                  | M3BJ 315SMC                    | 3GBJ316230-_DG706          | 47                    | 92.4                         | 1399                  | 0.92                              | 1.4                                 | 3.9                                                     | 299                                     | 880                     |
| 51                                  | M3BJ 315MLA                    | 3GBJ316410-_DG706          | 63                    | 93.4                         | 1958                  | 0.94                              | 1.4                                 | 5.8                                                     | 299                                     | 1115                    |
| 65                                  | M3BJ 315LKB                    | 3GBJ316820-_DG706          | 82                    | 93.8                         | 2486                  | 0.92                              | 1.5                                 | 7.8                                                     | 299                                     | 1415                    |
| 81                                  | M3BJ 315LKC                    | 3GBJ316830-_DG706          | 103                   | 94.0                         | 3107                  | 0.91                              | 1.5                                 | 9.8                                                     | 299                                     | 1590                    |
| 81                                  | M3BJ 355SMB                    | 3GBJ356220-_DG706          | 97                    | 94.3                         | 3101                  | 0.96                              | 1.7                                 | 17.1                                                    | 299                                     | 1765                    |
| 121                                 | M3BJ 355MLB                    | 3GBJ356420-_DG706          | 145                   | 94.5                         | 4650                  | 0.96                              | 1.6                                 | 22.4                                                    | 299                                     | 2190                    |
| 150                                 | M3BJ 355LKB                    | 3GBJ356820-_DG706          | 181                   | 94.8                         | 5733                  | 0.95                              | 1.6                                 | 28.5                                                    | 299                                     | 2670                    |
| 178                                 | M3BJ 400LC                     | 3GBJ406530-_DG706          | 208                   | 95.6                         | 6838                  | 0.98                              | 1.5                                 | 41.1                                                    | 299                                     | 3260                    |
| <sup>2)</sup> AMZ 0500L_10 RAM      |                                |                            |                       |                              |                       |                                   |                                     |                                                         |                                         |                         |
| <sup>2)</sup> AMZ 0560L_10 RAM      |                                |                            |                       |                              |                       |                                   |                                     |                                                         |                                         |                         |
| <b><math>n_n = 316</math> r/min</b> |                                |                            |                       |                              |                       |                                   |                                     |                                                         |                                         |                         |
| 27                                  | M3BJ 280SMB                    | 3GBJ286220-_DG705          | 37                    | 91.9                         | 817                   | 0.88                              | 1.4                                 | 2.2                                                     | 379                                     | 650                     |
| 40                                  | M3BJ 315SMC                    | 3GBJ316230-_DG705          | 54                    | 92.7                         | 1221                  | 0.88                              | 1.5                                 | 3.9                                                     | 379                                     | 880                     |
| 60                                  | M3BJ 315MLA                    | 3GBJ316410-_DG705          | 77                    | 93.8                         | 1816                  | 0.91                              | 1.5                                 | 5.8                                                     | 379                                     | 1115                    |
| 73                                  | M3BJ 315LKB                    | 3GBJ316820-_DG705          | 88                    | 94.2                         | 2196                  | 0.95                              | 1.6                                 | 7.8                                                     | 379                                     | 1415                    |
| 99                                  | M3BJ 315LKC                    | 3GBJ316830-_DG705          | 126                   | 94.5                         | 2979                  | 0.90                              | 1.6                                 | 9.8                                                     | 379                                     | 1590                    |
| 98                                  | M3BJ 355SMB                    | 3GBJ356220-_DG705          | 120                   | 94.4                         | 2946                  | 0.94                              | 1.8                                 | 17.1                                                    | 379                                     | 1765                    |
| 129                                 | M3BJ 355MLB                    | 3GBJ356420-_DG705          | 160                   | 94.6                         | 3908                  | 0.93                              | 1.8                                 | 22.4                                                    | 379                                     | 2190                    |
| 162                                 | M3BJ 355LKB                    | 3GBJ356820-_DG705          | 190                   | 95.0                         | 4887                  | 0.97                              | 1.8                                 | 28.5                                                    | 379                                     | 2670                    |
| 196                                 | M3BJ 400LC                     | 3GBJ406530-_DG705          | 227                   | 95.8                         | 5926                  | 0.98                              | 1.7                                 | 41.1                                                    | 379                                     | 3260                    |
| <sup>2)</sup> AMZ 0500L_10 RAM      |                                |                            |                       |                              |                       |                                   |                                     |                                                         |                                         |                         |
| <sup>2)</sup> AMZ 0560L_10 RAM      |                                |                            |                       |                              |                       |                                   |                                     |                                                         |                                         |                         |
| <b><math>n_n = 357</math> r/min</b> |                                |                            |                       |                              |                       |                                   |                                     |                                                         |                                         |                         |
| 37                                  | M3BJ 280SMB                    | 3GBJ286220-_DG707          | 47                    | 92.9                         | 978                   | 0.92                              | 1.2                                 | 2.2                                                     | 428                                     | 650                     |
| 51                                  | M3BJ 315SMC                    | 3GBJ316230-_DG707          | 63                    | 93.8                         | 1367                  | 0.95                              | 1.4                                 | 3.9                                                     | 428                                     | 880                     |
| 81                                  | M3BJ 315MLA                    | 3GBJ316410-_DG707          | 101                   | 94.4                         | 2168                  | 0.93                              | 1.3                                 | 5.8                                                     | 428                                     | 1115                    |
| 101                                 | M3BJ 315LKB                    | 3GBJ316820-_DG707          | 124                   | 94.9                         | 2711                  | 0.93                              | 1.4                                 | 7.8                                                     | 428                                     | 1415                    |
| 130                                 | M3BJ 315LKC                    | 3GBJ316830-_DG707          | 158                   | 95.1                         | 3470                  | 0.94                              | 1.4                                 | 9.8                                                     | 428                                     | 1590                    |
| 121                                 | M3BJ 355SMB                    | 3GBJ356220-_DG707          | 140                   | 95.1                         | 3249                  | 0.99                              | 1.6                                 | 17.1                                                    | 428                                     | 1765                    |
| 178                                 | M3BJ 355MLB                    | 3GBJ356420-_DG707          | 221                   | 95.4                         | 4752                  | 0.92                              | 1.6                                 | 22.4                                                    | 428                                     | 2190                    |
| 226                                 | M3BJ 355LKB                    | 3GBJ356820-_DG707          | 268                   | 95.6                         | 6055                  | 0.96                              | 1.6                                 | 28.5                                                    | 428                                     | 2670                    |
| 271                                 | M3BJ 400LC                     | 3GBJ406530-_DG707          | 344                   | 96.1                         | 7254                  | 0.89                              | 1.6                                 | 41.1                                                    | 428                                     | 3260                    |
| <sup>2)</sup> AMZ 0500L_10 RAM      |                                |                            |                       |                              |                       |                                   |                                     |                                                         |                                         |                         |
| <sup>2)</sup> AMZ 0560L_10 RAM      |                                |                            |                       |                              |                       |                                   |                                     |                                                         |                                         |                         |

<sup>1)</sup> See ordering information - section for details on motor type and product code

<sup>2)</sup> Performance values for IEC frame sizes 500 and 560 on request

<sup>3)</sup>  $T_{max}/T_n$  value represents maximum short time overloadability with inverter supply. This does not represent the pull-out torque value according to IEC.

# Permanent magnet synchronous motors

## 575 V Technical data

### IC 411: Self ventilated motors

Loadability according to Figure 1 on page 6

Network voltage 575 V, at motor terminals 532 V

| Output<br>kW                        | Type designation <sup>1)</sup> | Product code <sup>1)</sup> | Current<br>$I_N$<br>A | Efficiency<br>Full load<br>% | Torque<br>$T_N$<br>Nm | Power<br>factor<br>$\cos \varphi$ | Torque<br>$\frac{T_{max}}{T_N}$ <sup>3)</sup> | Moment<br>of inertia<br>$J=1/4GD^2$<br>kgm <sup>2</sup> | Maximum<br>speed,<br>$n_{max}$<br>r/min | Weight<br>approx.<br>kg |
|-------------------------------------|--------------------------------|----------------------------|-----------------------|------------------------------|-----------------------|-----------------------------------|-----------------------------------------------|---------------------------------------------------------|-----------------------------------------|-------------------------|
| <b><math>n_n = 431</math> r/min</b> |                                |                            |                       |                              |                       |                                   |                                               |                                                         |                                         |                         |
| 40                                  | M3BJ 280SMB                    | 3GBJ286220-_DG706          | 53                    | 93.1                         | 891                   | 0.89                              | 1.3                                           | 2.2                                                     | 517                                     | 650                     |
| 60                                  | M3BJ 315SMC                    | 3GBJ316230-_DG706          | 77                    | 94.0                         | 1327                  | 0.90                              | 1.4                                           | 3.9                                                     | 517                                     | 880                     |
| 83                                  | M3BJ 315MLA                    | 3GBJ316410-_DG706          | 102                   | 94.8                         | 1826                  | 0.93                              | 1.5                                           | 5.8                                                     | 517                                     | 1115                    |
| 102                                 | M3BJ 315LKB                    | 3GBJ316820-_DG706          | 129                   | 94.9                         | 2251                  | 0.90                              | 1.7                                           | 7.8                                                     | 517                                     | 1415                    |
| 125                                 | M3BJ 315LKC                    | 3GBJ316830-_DG706          | 162                   | 95.1                         | 2776                  | 0.89                              | 1.7                                           | 9.8                                                     | 517                                     | 1590                    |
| 125                                 | M3BJ 355SMB                    | 3GBJ356220-_DG706          | 150                   | 95.0                         | 2760                  | 0.95                              | 1.9                                           | 17.1                                                    | 517                                     | 1765                    |
| 191                                 | M3BJ 355MLB                    | 3GBJ356420-_DG706          | 229                   | 95.5                         | 4239                  | 0.95                              | 1.7                                           | 22.4                                                    | 517                                     | 2190                    |
| 229                                 | M3BJ 355LKB                    | 3GBJ356820-_DG706          | 278                   | 95.6                         | 5076                  | 0.94                              | 1.8                                           | 28.5                                                    | 517                                     | 2670                    |
| 282                                 | M3BJ 400LC                     | 3GBJ406530-_DG706          | 326                   | 96.3                         | 6235                  | 0.97                              | 1.7                                           | 41.1                                                    | 517                                     | 3260                    |
| <sup>3)</sup> AMZ 0500L_10 RAM      |                                |                            |                       |                              |                       |                                   |                                               |                                                         |                                         |                         |
| <sup>3)</sup> AMZ 0560L_10 RAM      |                                |                            |                       |                              |                       |                                   |                                               |                                                         |                                         |                         |
| <b><math>n_n = 498</math> r/min</b> |                                |                            |                       |                              |                       |                                   |                                               |                                                         |                                         |                         |
| 54                                  | M3BJ 280SMB                    | 3GBJ286220-_DG708          | 70                    | 93.8                         | 1044                  | 0.89                              | 1.2                                           | 2.2                                                     | 598                                     | 650                     |
| 81                                  | M3BJ 315SMC                    | 3GBJ316230-_DG708          | 100                   | 94.7                         | 1554                  | 0.93                              | 1.3                                           | 3.9                                                     | 598                                     | 880                     |
| 107                                 | M3BJ 315MLA                    | 3GBJ316410-_DG708          | 127                   | 95.4                         | 2053                  | 0.96                              | 1.3                                           | 5.8                                                     | 598                                     | 1115                    |
| 130                                 | M3BJ 315LKB                    | 3GBJ316820-_DG708          | 163                   | 95.6                         | 2484                  | 0.90                              | 1.5                                           | 7.8                                                     | 598                                     | 1415                    |
| 162                                 | M3BJ 315LKC                    | 3GBJ316830-_DG708          | 192                   | 95.7                         | 3109                  | 0.96                              | 1.5                                           | 9.8                                                     | 598                                     | 1590                    |
| 162                                 | M3BJ 355SMB                    | 3GBJ356220-_DG708          | 194                   | 95.7                         | 3099                  | 0.95                              | 1.8                                           | 17.1                                                    | 598                                     | 1765                    |
| 271                                 | M3BJ 355MLB                    | 3GBJ356420-_DG708          | 321                   | 96.1                         | 5194                  | 0.95                              | 1.5                                           | 22.4                                                    | 598                                     | 2190                    |
| 287                                 | M3BJ 355LKB                    | 3GBJ356820-_DG708          | 326                   | 96.1                         | 5510                  | 1.00                              | 1.5                                           | 28.5                                                    | 598                                     | 2670                    |
| 381                                 | M3BJ 400LC                     | 3GBJ406530-_DG708          | 441                   | 96.7                         | 7302                  | 0.97                              | 1.5                                           | 41.1                                                    | 598                                     | 3260                    |
| <sup>2)</sup> AMZ 0500L_10 RAM      |                                |                            |                       |                              |                       |                                   |                                               |                                                         |                                         |                         |
| <sup>2)</sup> AMZ 0560L_10 RAM      |                                |                            |                       |                              |                       |                                   |                                               |                                                         |                                         |                         |
| <b><math>n_n = 618</math> r/min</b> |                                |                            |                       |                              |                       |                                   |                                               |                                                         |                                         |                         |
| 59                                  | M3BJ 280SMB                    | 3GBJ286220-_DG707          | 75                    | 94.3                         | 912                   | 0.91                              | 1.3                                           | 2.2                                                     | 742                                     | 650                     |
| 81                                  | M3BJ 315SMC                    | 3GBJ316230-_DG707          | 99                    | 95.1                         | 1255                  | 0.94                              | 1.5                                           | 3.9                                                     | 742                                     | 880                     |
| 127                                 | M3BJ 315MLA                    | 3GBJ316410-_DG707          | 158                   | 95.4                         | 1968                  | 0.92                              | 1.5                                           | 5.8                                                     | 742                                     | 1115                    |
| 156                                 | M3BJ 315LKB                    | 3GBJ316820-_DG707          | 190                   | 95.6                         | 2406                  | 0.93                              | 1.6                                           | 7.8                                                     | 742                                     | 1415                    |
| 198                                 | M3BJ 315LKC                    | 3GBJ316830-_DG707          | 240                   | 95.8                         | 3061                  | 0.93                              | 1.5                                           | 9.8                                                     | 742                                     | 1590                    |
| 183                                 | M3BJ 355SMB                    | 3GBJ356220-_DG707          | 209                   | 95.7                         | 2821                  | 0.99                              | 1.8                                           | 17.1                                                    | 742                                     | 1765                    |
| 259                                 | M3BJ 355MLB                    | 3GBJ356420-_DG707          | 327                   | 95.8                         | 4000                  | 0.90                              | 1.9                                           | 22.4                                                    | 742                                     | 2190                    |
| 334                                 | M3BJ 355LKB                    | 3GBJ356820-_DG707          | 394                   | 96.1                         | 5156                  | 0.96                              | 1.8                                           | 28.5                                                    | 742                                     | 2670                    |
| 387                                 | M3BJ 400LKC                    | 3GBJ406830-_DG707          | 503                   | 96.5                         | 5984                  | 0.87                              | 1.9                                           | 41.1                                                    | 742                                     | 3260                    |
| <sup>2)</sup> AMZ 0500L_10 RAM      |                                |                            |                       |                              |                       |                                   |                                               |                                                         |                                         |                         |
| <sup>2)</sup> AMZ 0560L_10 RAM      |                                |                            |                       |                              |                       |                                   |                                               |                                                         |                                         |                         |
| <b><math>nn = 863</math> r/min</b>  |                                |                            |                       |                              |                       |                                   |                                               |                                                         |                                         |                         |
| 84                                  | M3BJ 280SMB                    | 3GBJ286220-_DG708          | 109                   | 94.8                         | 931                   | 0.89                              | 1.4                                           | 2.2                                                     | 863                                     | 650                     |
| 125                                 | M3BJ 315SMC                    | 3GBJ316230-_DG708          | 153                   | 95.6                         | 1387                  | 0.93                              | 1.4                                           | 3.9                                                     | 863                                     | 880                     |
| 159                                 | M3BJ 315MLA                    | 3GBJ316410-_DG708          | 188                   | 95.8                         | 1765                  | 0.96                              | 1.5                                           | 5.8                                                     | 863                                     | 1115                    |
| 173                                 | M3BJ 315LKB                    | 3GBJ316820-_DG708          | 224                   | 95.4                         | 1919                  | 0.88                              | 2.0                                           | 7.8                                                     | 863                                     | 1415                    |
| 224                                 | M3BJ 315LKC                    | 3GBJ316830-_DG708          | 265                   | 95.8                         | 2474                  | 0.96                              | 1.8                                           | 9.8                                                     | 863                                     | 1590                    |
| 207                                 | M3BJ 355SMB                    | 3GBJ356220-_DG708          | 253                   | 95.3                         | 2287                  | 0.93                              | 2.4                                           | 17.1                                                    | 863                                     | 1765                    |
| 388                                 | M3BJ 355MLB                    | 3GBJ356420-_DG708          | 460                   | 96.3                         | 4294                  | 0.95                              | 1.8                                           | 22.4                                                    | 863                                     | 2190                    |
| 395                                 | M3BJ 355LKB                    | 3GBJ356820-_DG708          | 446                   | 96.1                         | 4367                  | 1.00                              | 1.9                                           | 28.5                                                    | 863                                     | 2670                    |
| 543                                 | M3BJ 400LC                     | 3GBJ406530-_DG708          | 624                   | 96.9                         | 6011                  | 0.97                              | 1.8                                           | 41.1                                                    | 863                                     | 3260                    |
| <sup>2)</sup> AMZ 0500L_10 RAM      |                                |                            |                       |                              |                       |                                   |                                               |                                                         |                                         |                         |
| <sup>2)</sup> AMZ 0560L_10 RAM      |                                |                            |                       |                              |                       |                                   |                                               |                                                         |                                         |                         |

<sup>1)</sup> See ordering information - section for details on motor type and product code

<sup>2)</sup> Performance values for IEC frame sizes 500 and 560 on request

<sup>3)</sup>  $T_{max}/T_n$  value represents maximum short time overloadability with inverter supply. This does not represent the pull-out torque value according to IEC.

# Permanent magnet synchronous motors

## 690 V Technical data

### IC 411: Self ventilated motors

Loadability according to Figure 1 on page 6

Network voltage 690 V, at motor terminals 638 V

| Output<br>kW               | Type designation <sup>1)</sup> | Product code <sup>1)</sup> | Current<br><br>$I_N$<br><br>A | Efficiency<br><br>Full load<br>100 % | Torque<br><br>$T_N$<br><br>Nm | Power<br>factor<br>$\cos \varphi$ | Torque<br><br>$\frac{T_{max}}{T_N^{3)}$ | Moment<br>of inertia<br>$J=1/4GD^2$<br><br>kgm <sup>3</sup> | Maximum<br>speed,<br><br>$n_{max}$<br>r/min | Weight<br>ap-<br>prox.<br>kg |
|----------------------------|--------------------------------|----------------------------|-------------------------------|--------------------------------------|-------------------------------|-----------------------------------|-----------------------------------------|-------------------------------------------------------------|---------------------------------------------|------------------------------|
| n <sub>n</sub> = 220 r/min |                                |                            |                               |                                      |                               |                                   |                                         |                                                             |                                             |                              |
| 20                         | M3BJ 280SMB                    | 3GBJ286220-_DG705          | 22                            | 90.0                                 | 868                           | 0.90                              | 1.3                                     | 2.2                                                         | 220                                         | 650                          |
| 30                         | M3BJ 315SMC                    | 3GBJ316230-_DG705          | 33                            | 91.5                                 | 1306                          | 0.90                              | 1.4                                     | 3.9                                                         | 220                                         | 880                          |
| 45                         | M3BJ 315MLA                    | 3GBJ316410-_DG705          | 48                            | 92.6                                 | 1952                          | 0.92                              | 1.4                                     | 5.8                                                         | 220                                         | 1115                         |
| 55                         | M3BJ 315LKB                    | 3GBJ316820-_DG705          | 56                            | 93.2                                 | 2385                          | 0.95                              | 1.5                                     | 7.8                                                         | 220                                         | 1415                         |
| 75                         | M3BJ 315LKC                    | 3GBJ316830-_DG705          | 79                            | 93.5                                 | 3252                          | 0.91                              | 1.4                                     | 9.8                                                         | 220                                         | 1590                         |
| 75                         | M3BJ 355SMB                    | 3GBJ356220-_DG705          | 76                            | 93.5                                 | 3250                          | 0.95                              | 1.6                                     | 17.1                                                        | 220                                         | 1765                         |
| 99                         | M3BJ 355MLB                    | 3GBJ356420-_DG705          | 102                           | 93.9                                 | 4332                          | 0.94                              | 1.7                                     | 22.4                                                        | 220                                         | 2190                         |
| 124                        | M3BJ 355LKB                    | 3GBJ356820-_DG705          | 122                           | 94.2                                 | 5418                          | 0.98                              | 1.6                                     | 28.5                                                        | 220                                         | 2670                         |
| 149                        | M3BJ 400LC                     | 3GBJ406530-_DG705          | 145                           | 95.1                                 | 6503                          | 0.98                              | 1.5                                     | 41.1                                                        | 220                                         | 3260                         |
| 2)                         | AMZ 0500L_10 RAM               |                            |                               |                                      |                               |                                   |                                         |                                                             |                                             |                              |
| 2)                         | AMZ 0560L_10 RAM               |                            |                               |                                      |                               |                                   |                                         |                                                             |                                             |                              |
| n <sub>n</sub> = 300 r/min |                                |                            |                               |                                      |                               |                                   |                                         |                                                             |                                             |                              |
| 30                         | M3BJ 280SMB                    | 3GBJ286220-_DG706          | 33                            | 92.0                                 | 954                           | 0.90                              | 1.3                                     | 2.2                                                         | 300                                         | 650                          |
| 45                         | M3BJ 315SMC                    | 3GBJ316230-_DG706          | 48                            | 92.9                                 | 1431                          | 0.91                              | 1.3                                     | 3.9                                                         | 300                                         | 880                          |
| 63                         | M3BJ 315MLA                    | 3GBJ316410-_DG706          | 65                            | 93.9                                 | 2003                          | 0.94                              | 1.4                                     | 5.8                                                         | 300                                         | 1115                         |
| 80                         | M3BJ 315LKB                    | 3GBJ316820-_DG706          | 84                            | 94.3                                 | 2544                          | 0.91                              | 1.5                                     | 7.8                                                         | 300                                         | 1415                         |
| 100                        | M3BJ 315LKC                    | 3GBJ316830-_DG706          | 106                           | 94.4                                 | 3181                          | 0.90                              | 1.5                                     | 9.8                                                         | 300                                         | 1590                         |
| 99                         | M3BJ 355SMB                    | 3GBJ356220-_DG706          | 100                           | 94.6                                 | 3177                          | 0.96                              | 1.7                                     | 17.1                                                        | 300                                         | 1765                         |
| 149                        | M3BJ 355MLB                    | 3GBJ356420-_DG706          | 149                           | 94.9                                 | 4763                          | 0.96                              | 1.5                                     | 22.4                                                        | 300                                         | 2190                         |
| 184                        | M3BJ 355LKB                    | 3GBJ356820-_DG706          | 185                           | 95.1                                 | 5881                          | 0.95                              | 1.6                                     | 28.5                                                        | 300                                         | 2670                         |
| 219                        | M3BJ 400LC                     | 3GBJ406530-_DG706          | 212                           | 95.8                                 | 6991                          | 0.97                              | 1.5                                     | 41.1                                                        | 300                                         | 3260                         |
| 2)                         | AMZ 0500L_10 RAM               |                            |                               |                                      |                               |                                   |                                         |                                                             |                                             |                              |
| 2)                         | AMZ 0560L_10 RAM               |                            |                               |                                      |                               |                                   |                                         |                                                             |                                             |                              |
| n <sub>n</sub> = 380 r/min |                                |                            |                               |                                      |                               |                                   |                                         |                                                             |                                             |                              |
| 31                         | M3BJ 280SMB                    | 3GBJ286220-_DG705          | 35                            | 92.2                                 | 770                           | 0.87                              | 1.5                                     | 2.2                                                         | 380                                         | 650                          |
| 46                         | M3BJ 315SMC                    | 3GBJ316230-_DG705          | 51                            | 93.2                                 | 1145                          | 0.87                              | 1.6                                     | 3.9                                                         | 380                                         | 880                          |
| 67                         | M3BJ 315MLA                    | 3GBJ316410-_DG705          | 72                            | 94.1                                 | 1696                          | 0.90                              | 1.6                                     | 5.8                                                         | 380                                         | 1115                         |
| 81                         | M3BJ 315LKB                    | 3GBJ316820-_DG705          | 82                            | 94.5                                 | 2032                          | 0.94                              | 1.7                                     | 7.8                                                         | 380                                         | 1415                         |
| 109                        | M3BJ 315LKC                    | 3GBJ316830-_DG705          | 117                           | 94.7                                 | 2745                          | 0.89                              | 1.7                                     | 9.8                                                         | 380                                         | 1590                         |
| 107                        | M3BJ 355SMB                    | 3GBJ356220-_DG705          | 110                           | 94.4                                 | 2688                          | 0.93                              | 2.0                                     | 17.1                                                        | 380                                         | 1765                         |
| 141                        | M3BJ 355MLB                    | 3GBJ356420-_DG705          | 147                           | 94.8                                 | 3545                          | 0.92                              | 2.0                                     | 22.4                                                        | 380                                         | 2190                         |
| 177                        | M3BJ 355LKB                    | 3GBJ356820-_DG705          | 173                           | 95.1                                 | 4444                          | 0.97                              | 2.0                                     | 28.5                                                        | 380                                         | 2670                         |
| 217                        | M3BJ 400LC                     | 3GBJ406530-_DG705          | 208                           | 95.9                                 | 5448                          | 0.98                              | 1.8                                     | 41.1                                                        | 380                                         | 3260                         |
| 2)                         | AMZ 0500L_10 RAM               |                            |                               |                                      |                               |                                   |                                         |                                                             |                                             |                              |
| 2)                         | AMZ 0560L_10 RAM               |                            |                               |                                      |                               |                                   |                                         |                                                             |                                             |                              |
| n <sub>n</sub> = 430 r/min |                                |                            |                               |                                      |                               |                                   |                                         |                                                             |                                             |                              |
| 45                         | M3BJ 280SMB                    | 3GBJ286220-_DG707          | 48                            | 93.3                                 | 999                           | 0.91                              | 1.2                                     | 2.2                                                         | 430                                         | 650                          |
| 63                         | M3BJ 315SMC                    | 3GBJ316230-_DG707          | 64                            | 94.3                                 | 1398                          | 0.94                              | 1.3                                     | 3.9                                                         | 430                                         | 880                          |
| 100                        | M3BJ 315MLA                    | 3GBJ316410-_DG707          | 103                           | 94.9                                 | 2218                          | 0.92                              | 1.3                                     | 5.8                                                         | 430                                         | 1115                         |
| 124                        | M3BJ 315LKB                    | 3GBJ316820-_DG707          | 127                           | 95.2                                 | 2773                          | 0.93                              | 1.4                                     | 7.8                                                         | 430                                         | 1415                         |
| 159                        | M3BJ 315LKC                    | 3GBJ316830-_DG707          | 162                           | 95.4                                 | 3550                          | 0.93                              | 1.3                                     | 9.8                                                         | 430                                         | 1590                         |
| 149                        | M3BJ 355SMB                    | 3GBJ356220-_DG707          | 144                           | 95.4                                 | 3329                          | 0.99                              | 1.5                                     | 17.1                                                        | 430                                         | 1765                         |
| 219                        | M3BJ 355MLB                    | 3GBJ356420-_DG707          | 226                           | 95.6                                 | 4875                          | 0.92                              | 1.6                                     | 22.4                                                        | 430                                         | 2190                         |
| 279                        | M3BJ 355LKB                    | 3GBJ356820-_DG707          | 274                           | 95.9                                 | 6210                          | 0.96                              | 1.5                                     | 28.5                                                        | 430                                         | 2670                         |
| 332                        | M3BJ 400LC                     | 3GBJ406530-_DG707          | 351                           | 96.3                                 | 7399                          | 0.89                              | 1.6                                     | 41.1                                                        | 430                                         | 3260                         |
| 2)                         | AMZ 0500L_10 RAM               |                            |                               |                                      |                               |                                   |                                         |                                                             |                                             |                              |
| 2)                         | AMZ 0560L_10 RAM               |                            |                               |                                      |                               |                                   |                                         |                                                             |                                             |                              |

<sup>1)</sup> See ordering information - section for details on motor type and product code

<sup>2)</sup> Performance values for IEC frame sizes 500 and 560 on request

<sup>3)</sup>  $T_{max}/T_n$  value represents maximum short time overloadability with inverter supply. This does not represent the pull-out torque value according to IEC.

# Permanent magnet synchronous motors

## 690 V Technical data

### IC 411: Self ventilated motors

Loadability according to Figure 1 on page 6

Network voltage 690 V, at motor terminals 638 V

| Output<br>kW               | Type designation <sup>1)</sup> | Product code <sup>1)</sup> | Current<br><br>$I_N$<br><br>A | Efficiency<br><br>Full load<br>% | Torque<br><br>$T_N$<br><br>Nm | Power<br>factor<br>$\cos \varphi$ | Torque<br><br>$\frac{T_{max}}{T_N^{3)}$ | Moment<br>of inertia<br>$J=1/4GD^2$<br>kgm <sup>2</sup> | Maximum<br>speed,<br>$n_{max}$<br>r/min | Weight<br>approx.<br>kg |
|----------------------------|--------------------------------|----------------------------|-------------------------------|----------------------------------|-------------------------------|-----------------------------------|-----------------------------------------|---------------------------------------------------------|-----------------------------------------|-------------------------|
| n <sub>n</sub> = 518 r/min |                                |                            |                               |                                  |                               |                                   |                                         |                                                         |                                         |                         |
| 45                         | M3BJ 280SMB                    | 3GBJ286220-_DG706          | 49                            | 93.4                             | 833                           | 0.89                              | 1.4                                     | 2.2                                                     | 518                                     | 650                     |
| 67                         | M3BJ 315SMC                    | 3GBJ316230-_DG706          | 72                            | 94.4                             | 1235                          | 0.90                              | 1.6                                     | 3.9                                                     | 518                                     | 880                     |
| 91                         | M3BJ 315MLA                    | 3GBJ316410-_DG706          | 93                            | 94.9                             | 1675                          | 0.93                              | 1.6                                     | 5.8                                                     | 518                                     | 1115                    |
| 109                        | M3BJ 315LKB                    | 3GBJ316820-_DG706          | 116                           | 94.9                             | 2007                          | 0.89                              | 1.9                                     | 7.8                                                     | 518                                     | 1415                    |
| 132                        | M3BJ 315LKC                    | 3GBJ316830-_DG706          | 145                           | 95.0                             | 2442                          | 0.87                              | 1.9                                     | 9.8                                                     | 518                                     | 1590                    |
| 130                        | M3BJ 355SMB                    | 3GBJ356220-_DG706          | 132                           | 94.9                             | 2406                          | 0.94                              | 2.2                                     | 17.1                                                    | 518                                     | 1765                    |
| 205                        | M3BJ 355MLB                    | 3GBJ356420-_DG706          | 206                           | 95.5                             | 3786                          | 0.95                              | 1.9                                     | 22.4                                                    | 518                                     | 2190                    |
| 240                        | M3BJ 355LKB                    | 3GBJ356820-_DG706          | 245                           | 95.5                             | 4429                          | 0.93                              | 2.1                                     | 28.5                                                    | 518                                     | 2670                    |
| 304                        | M3BJ 400LC                     | 3GBJ406530-_DG706          | 292                           | 96.4                             | 5605                          | 0.98                              | 1.8                                     | 41.1                                                    | 518                                     | 3260                    |
| 2)                         | AMZ 0500L_10 RAM               |                            |                               |                                  |                               |                                   |                                         |                                                         |                                         |                         |
| 2)                         | AMZ 0560L_10 RAM               |                            |                               |                                  |                               |                                   |                                         |                                                         |                                         |                         |
| n <sub>n</sub> = 600 r/min |                                |                            |                               |                                  |                               |                                   |                                         |                                                         |                                         |                         |
| 67                         | M3BJ 280SMB                    | 3GBJ286220-_DG708          | 72                            | 94.4                             | 1067                          | 0.89                              | 1.2                                     | 2.2                                                     | 600                                     | 650                     |
| 100                        | M3BJ 315SMC                    | 3GBJ316230-_DG708          | 102                           | 95.1                             | 1590                          | 0.93                              | 1.2                                     | 3.9                                                     | 600                                     | 880                     |
| 131                        | M3BJ 315MLA                    | 3GBJ316410-_DG708          | 130                           | 95.6                             | 2099                          | 0.95                              | 1.3                                     | 5.8                                                     | 600                                     | 1115                    |
| 159                        | M3BJ 315LKB                    | 3GBJ316820-_DG708          | 167                           | 95.7                             | 2543                          | 0.90                              | 1.5                                     | 7.8                                                     | 600                                     | 1415                    |
| 199                        | M3BJ 315LKC                    | 3GBJ316830-_DG708          | 197                           | 95.9                             | 3180                          | 0.95                              | 1.4                                     | 9.8                                                     | 600                                     | 1590                    |
| 199                        | M3BJ 355SMB                    | 3GBJ356220-_DG708          | 199                           | 95.9                             | 3178                          | 0.95                              | 1.7                                     | 17.1                                                    | 600                                     | 1765                    |
| 333                        | M3BJ 355MLB                    | 3GBJ356420-_DG708          | 329                           | 96.2                             | 5323                          | 0.95                              | 1.4                                     | 22.4                                                    | 600                                     | 2190                    |
| 353                        | M3BJ 355LKB                    | 3GBJ356820-_DG708          | 334                           | 96.2                             | 5639                          | 0.99                              | 1.5                                     | 28.5                                                    | 600                                     | 2670                    |
| 467                        | M3BJ 400LC                     | 3GBJ406530-_DG708          | 451                           | 96.9                             | 7468                          | 0.97                              | 1.4                                     | 41.1                                                    | 600                                     | 3260                    |
| 2)                         | AMZ 0500L_10 RAM               |                            |                               |                                  |                               |                                   |                                         |                                                         |                                         |                         |
| 2)                         | AMZ 0560L_10 RAM               |                            |                               |                                  |                               |                                   |                                         |                                                         |                                         |                         |
| n <sub>n</sub> = 742 r/min |                                |                            |                               |                                  |                               |                                   |                                         |                                                         |                                         |                         |
| 65                         | M3BJ 280SMB                    | 3GBJ286220-_DG707          | 69                            | 94.3                             | 834                           | 0.91                              | 1.5                                     | 2.2                                                     | 742                                     | 650                     |
| 88                         | M3BJ 315SMC                    | 3GBJ316230-_DG707          | 89                            | 95.1                             | 1134                          | 0.94                              | 1.6                                     | 3.9                                                     | 742                                     | 880                     |
| 136                        | M3BJ 315MLA                    | 3GBJ316410-_DG707          | 141                           | 95.5                             | 1756                          | 0.92                              | 1.7                                     | 5.8                                                     | 742                                     | 1115                    |
| 163                        | M3BJ 315LKB                    | 3GBJ316820-_DG707          | 167                           | 95.5                             | 2092                          | 0.93                              | 1.8                                     | 7.8                                                     | 742                                     | 1415                    |
| 207                        | M3BJ 315LKC                    | 3GBJ316830-_DG707          | 210                           | 95.6                             | 2658                          | 0.93                              | 1.8                                     | 9.8                                                     | 742                                     | 1590                    |
| 187                        | M3BJ 355SMB                    | 3GBJ356220-_DG707          | 179                           | 95.4                             | 2409                          | 0.99                              | 2.1                                     | 17.1                                                    | 742                                     | 1765                    |
| 255                        | M3BJ 355MLB                    | 3GBJ356420-_DG707          | 277                           | 95.4                             | 3278                          | 0.87                              | 2.4                                     | 22.4                                                    | 742                                     | 2190                    |
| 335                        | M3BJ 355LKB                    | 3GBJ356820-_DG707          | 332                           | 95.7                             | 4313                          | 0.95                              | 2.2                                     | 28.5                                                    | 742                                     | 2670                    |
| 384                        | M3BJ 400LC                     | 3GBJ406530-_DG707          | 431                           | 96.2                             | 4940                          | 0.84                              | 2.4                                     | 41.1                                                    | 742                                     | 3260                    |
| 2)                         | AMZ 0500L_10 RAM               |                            |                               |                                  |                               |                                   |                                         |                                                         |                                         |                         |
| 2)                         | AMZ 0560L_10 RAM               |                            |                               |                                  |                               |                                   |                                         |                                                         |                                         |                         |

<sup>1)</sup> See ordering information - section for details on motor type and product code

<sup>2)</sup> Performance values for IEC frame sizes 500 and 560 on request

<sup>3)</sup>  $T_{max}/T_n$  value represents maximum short time overloadability with inverter supply. This does not represent the pull-out torque value according to IEC.

# Permanent magnet motors, frame sizes 280 to 400 - Variant codes

| Code <sup>1)</sup>              | Variant                                                                  | 280 | 315 | 355 to 400 |
|---------------------------------|--------------------------------------------------------------------------|-----|-----|------------|
| <b>Balancing</b>                |                                                                          |     |     |            |
| 424                             | Full key balancing.                                                      | P   | P   | P          |
| <b>Bearings and lubrication</b> |                                                                          |     |     |            |
| 036                             | Transport lock for bearings.                                             | M   | M   | M          |
| 037                             | Roller bearing at D-end.                                                 | R   | R   | R          |
| 039                             | Cold resistant grease. For bearing temperatures -55 - + 100°C            | M   | M   | M          |
| 041                             | Bearings regreasable via grease nipples.                                 | S   | S   | S          |
| 042                             | Locked drive-end.                                                        | S   | S   | S          |
| 043                             | SPM nipples.                                                             | S   | S   | S          |
| 058                             | Angular contact ball bearing at D-end, shaft force away from bearing     | R   | R   | R          |
| 059                             | Angular contact ball bearing at N-end, shaft force towards bearing       | R   | R   | R          |
| 060                             | Angular contact bearing at D-end, shaft force towards bearing            | R   | R   | R          |
| 061                             | Angular contact bearing at N-end, shaft force away from bearing          | R   | R   | R          |
| 107                             | Bearing mounted Pt-100 resistance elements.                              | P   | P   | P          |
| 108                             | Continuous bearing monitoring (SPM CMM).                                 | P   | P   | P          |
| 420                             | Bearing mounted PTC thermistors.                                         | P   | P   | P          |
| 701                             | Insulated bearing at N-end                                               | S   | S   | S          |
| <b>Branch standard designs</b>  |                                                                          |     |     |            |
| 178                             | Stainless steel/acid proof bolts.                                        | M   | M   | M          |
| 209                             | Non-standard voltage or frequency (special winding).                     | R   | R   | R          |
| 419                             | Textile industry design.                                                 | R   | R   | R          |
| 425                             | Corrosion protected stator and rotor core.                               | P   | P   | P          |
| 785                             | Reinforced tropicalization.                                              | R   | R   | R          |
| <b>Cooling system</b>           |                                                                          |     |     |            |
| 068                             | Metal fan.                                                               |     |     |            |
|                                 | Mandatory for ambient temperatures $\geq 60^{\circ}\text{C}$ .           | P   | P   | P          |
| 183                             | Separate motor cooling (fan axial, N-end).                               | P   | P   | P          |
| 422                             | Separate motor cooling (fan top or side, N-end).                         | P   | P   | P          |
| 791                             | Stainless steel fan cover.                                               | P   | P   | P          |
| <b>Coupling</b>                 |                                                                          |     |     |            |
| 035                             | Assembly of customer supplied coupling-half (finish bored and balanced). | R   | R   | R          |
| <b>Dimension drawing</b>        |                                                                          |     |     |            |
| 141                             | Binding dimension drawing.                                               | M   | M   | M          |
| <b>Drain holes</b>              |                                                                          |     |     |            |
| 065                             | Plugged existing drain holes.                                            | M   | M   | M          |
| 066                             | Modified drain hole position (for specified IM xxxx).                    | M   | M   | M          |
| 076                             | Draining holes with plugs.                                               | S   | S   | S          |
| <b>Earthing bolt</b>            |                                                                          |     |     |            |
| 067                             | External earthing bolt.                                                  | S   | S   | S          |
| <b>Heating elements</b>         |                                                                          |     |     |            |
| 450                             | Heating element, 100 - 120 V.                                            | M   | M   | M          |
| 451                             | Heating element, 200 - 240 V.                                            | M   | M   | M          |

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**P** = New manufacture only.  
**R** = On request.  
**NA** = Not applicable

| Code <sup>1)</sup>                     | Variant                                                                 | 280 | 315 | 355 to 400 |
|----------------------------------------|-------------------------------------------------------------------------|-----|-----|------------|
| <b>Insulation system</b>               |                                                                         |     |     |            |
| 014                                    | Winding insulation class H.                                             | P   | P   | P          |
| 405                                    | Special winding insulation for frequency converter supply,              | S   | S   | S          |
| 406                                    | Winding for supply > 690 ≤ 1000 V.                                      | R   | R   | R          |
| <b>Mounting arrangements</b>           |                                                                         |     |     |            |
| 009                                    | IM 2001 foot/flange mounted, IEC flange, from IM 1001 (B35 from B3).    | R   | R   | R          |
| <b>Noise reduction</b>                 |                                                                         |     |     |            |
| 055                                    | Noise reducing cover                                                    | P   | P   | P          |
| <b>Painting</b>                        |                                                                         |     |     |            |
| 111                                    | Offshore two-pack polyamide cured epoxy paint 160 mm                    | P   | P   | P          |
| 114                                    | Special paint colour, standard grade.                                   | M   | M   | M          |
| 115                                    | Offshore zink primer painting.                                          | R   | R   | R          |
| 179                                    | Special paint specification.                                            | R   | R   | R          |
| <b>Protection</b>                      |                                                                         |     |     |            |
| 072                                    | Radial seal at D-end.                                                   | M   | M   | M          |
| 073                                    | Sealed against oil at D-end.                                            | R   | R   | R          |
| 005                                    | Protective roof, vertical motor, shaft down.                            | M   | M   | M          |
| 401                                    | Protective roof, horizontal motor.                                      | P   | P   | P          |
| 403                                    | Degree of protection IP 56.                                             | M   | M   | M          |
| 783                                    | Labyrinth sealing at D-end.                                             | M   | M   | M          |
| <b>Rating &amp; instruction plates</b> |                                                                         |     |     |            |
| 002                                    | Restamping voltage, frequency and output, continuous duty.              | R   | R   | R          |
| 135                                    | Mounting of additional identification plate, stainless.                 | M   | M   | M          |
| 138                                    | Mounting of additional identification plate, aluminium.                 | M   | M   | M          |
| 139                                    | Additional identification plate delivered loose.                        | M   | M   | M          |
| 150                                    | Instruction plate and maintenance instructions in non-standard language | R   | R   | R          |
| 161                                    | Additional rating plate delivered loose.                                | M   | M   | M          |
| 163                                    | Additional frequency converter rating plate fixed to stator             | M   | M   | M          |
| <b>Shaft &amp; rotor</b>               |                                                                         |     |     |            |
| 069                                    | Two shaft extensions as per basic catalogue.                            | P   | P   | P          |
| 070                                    | One or two special shaft extensions.                                    | P   | P   | P          |
| 155                                    | Cylindrical shaft extension, D-end, without key-way.                    | P   | P   | P          |
| 156                                    | Cylindrical shaft extension, N-end, without key-way.                    | P   | P   | P          |
| 164                                    | Shaft extension with closed key-way.                                    | P   | P   | P          |
| 165                                    | Shaft extension with open key-way.                                      | S   | S   | S          |
| 410                                    | Stainless/acid-proof steel shaft (standard or                           |     |     |            |
| 427                                    | Shaft extension complies with Australian Standards (AS).                | P   | P   | P          |
| 431                                    | Special shaft material for low temperatures, -40°C.                     | P   | P   | P          |
| <b>Standards and regulations</b>       |                                                                         |     |     |            |
| 010                                    | Fulfilling CSA Safety Certificate                                       | R   | R   | R          |

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| Code <sup>1)</sup>                        | Variant                                                                                              | 280 | 315 | 355 to 400 |
|-------------------------------------------|------------------------------------------------------------------------------------------------------|-----|-----|------------|
| <b>Stator winding temperature sensors</b> |                                                                                                      |     |     |            |
|                                           | Breaking capacity for bimetal detector:<br>Sizes 280 - 400                                           |     |     |            |
| 121                                       | Bimetal detectors, break type (NCC), (3 in series), 130°C, in stator winding.                        | M   | M   | M          |
| 122                                       | Bimetal detectors, break type (NCC), (3 in series), 150°C, in stator winding.                        | M   | M   | M          |
| 123                                       | Bimetal detectors, break type (NCC), (3 in series), 170°C, in stator winding.                        | M   | M   | M          |
| 125                                       | Bimetal detectors, break type (NCC), (2x3 in series), 150°C, in stator winding.                      | M   | M   | M          |
| 127                                       | Bimetal detectors, break type (NCC), (3 in series, 130°C and 3 in series, 150°C), in stator winding. | M   | M   | M          |
| 435                                       | PTC - thermistors (3 in series), 130°C, in stator winding.                                           | R   | R   | R          |
| 436                                       | PTC - thermistors (3 in series), 150°C, in stator winding.                                           | R   | R   | R          |
| 437                                       | PTC - thermistors (3 in series), 170°C, in stator winding.                                           | R   | R   | R          |
| 439                                       | PTC - thermistors (2x3 in series), 150°C, in stator winding.                                         | R   | R   | R          |
| 441                                       | PTC - thermistors (3 in series, 130°C and 3 in series,                                               | R   | R   | R          |
| 442                                       | PTC - thermistors (3 in series, 150°C and 3 in series, 170°C, in stator winding.                     |     |     | M          |
| 445                                       | PT100 (1 per phase) in stator winding.                                                               | S   | S   | S          |
| 446                                       | PT100 (2 per phase) in stator winding.                                                               | M   | M   | M          |
| <b>Terminal box</b>                       |                                                                                                      |     |     |            |
| 015                                       | Motor supplied in D-connection.                                                                      | M   | M   | M          |
| 017                                       | Motor supplied in Y-connection.                                                                      | M   | M   | M          |
| 019                                       | Larger than standard terminal box.                                                                   | R   | R   | R          |
| 021                                       | Terminal box LHS (seen from D-end).                                                                  | R   | R   | R          |
| 180                                       | Terminal box RHS (seen from D-end).                                                                  | R   | R   | R          |
| 137                                       | Extended cable connection, low terminal box, "Flying leads".                                         | P   | P   | R          |
| 230                                       | Standard cable glands.                                                                               | S   | S   | S          |
| 400                                       | 4 x 90 degr turnable terminal box.                                                                   | P   | P   | M          |
| 402                                       | Terminal box adapted for Al cables.                                                                  | S   | S   | M          |
| 413                                       | Extended cable connection, no terminal box                                                           | P   | P   | P          |
| 418                                       | Separate terminal box for temperature detectors.                                                     | P   | P   | P          |
| 466                                       | Terminal box at N-end.                                                                               | P   | P   | P          |
| 704                                       | EMC cable termination                                                                                | M   | M   | M          |
| 729                                       | Cable flange without holes / Blank gland plates                                                      | M   | M   | M          |
| 731                                       | Two standard cable glands.                                                                           | S   | S   | S          |
| 743                                       | Painted steel flange for gable glands                                                                | M   | M   | M          |
| 744                                       | Stainless steel flange for gable glands                                                              | M   | M   | M          |
| <b>Testing</b>                            |                                                                                                      |     |     |            |
| 148                                       | Routine test report.                                                                                 | M   | M   | M          |
| 760                                       | Vibration level test.                                                                                | M   | M   | M          |
| 761                                       | Vibration spectrum test.                                                                             | M   | M   | M          |
| 762                                       | Noise level test.                                                                                    | M   | M   | M          |
| 763                                       | Noise spectrum test.                                                                                 | M   | M   | M          |
| 764                                       | Complete test with ABB frequency converter                                                           | M   | M   | M          |

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only.

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| Code <sup>1)</sup>                                            | Variant                                                                                                                   | 280 | 315 | 355 to 400 |
|---------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------|-----|-----|------------|
| <b>Pulse tacho &amp; separate cooling</b>                     |                                                                                                                           |     |     |            |
| <b>Cooling system</b>                                         |                                                                                                                           |     |     |            |
| 183                                                           | Separate motor cooling (fan axial, N-end).                                                                                | P   | P   | P          |
| 422                                                           | Separate motor cooling (fan top or side, N-end).                                                                          | P   | P   | P          |
| <b>Mounting of tacho; tacho not included</b>                  |                                                                                                                           |     |     |            |
| 182                                                           | Pulse sensor mounted as specified (Leine & Linde equivalent, hollow-shaft type).                                          | P   | P   | P          |
| 470                                                           | Prepared for hollow shaft pulse tacho (Leine&Linde equivalent).                                                           | P   | P   | P          |
| 479                                                           | Mounting of other types of tachos with shaft extension.                                                                   | P   | P   | P          |
| 570                                                           | Prepared for hollow shaft pulse tacho (Leine&Linde 562)                                                                   | P   | P   | P          |
| <b>Mounting of tacho; tacho included</b>                      |                                                                                                                           |     |     |            |
| 062                                                           | Tachogenerator.                                                                                                           | P   | P   | P          |
| 471                                                           | 512 hollow shaft pulse tacho (Leine&Linde equivalent) mounted.                                                            | P   | P   | P          |
| 472                                                           | 1024 hollow shaft pulse tacho (Leine&Linde equivalent) mounted.                                                           | P   | P   | P          |
| 473                                                           | 2048 hollow shaft pulse tacho (Leine&Linde equivalent) mounted.                                                           | P   | P   | P          |
| 572                                                           | 1024 pulse tacho (Leine&Linde 562).                                                                                       | P   | P   | P          |
| 573                                                           | 2048 pulse tacho (Leine&Linde 562).                                                                                       | P   | P   | P          |
| 748                                                           | Pulse tacho Lake Shore (RIM 8500) mounted.                                                                                | P   | P   | P          |
| 749                                                           | Pulse tacho Avtron (M285) mounted.                                                                                        | P   | P   | P          |
| <b>Separate motor cooling &amp; tacho; tacho not included</b> |                                                                                                                           |     |     |            |
| 474                                                           | Separate motor cooling and prepared for hollow shaft                                                                      | P   | P   | P          |
| 478                                                           | Separate motor cooling (fan top, N-end) and prepared for hollow shaft pulse tacho (Leine & Linde equivalent).             | P   | P   | P          |
| 574                                                           | Separate motor cooling (fan axial, N-end) and prepared for hollow shaft tacho (Leine & Linde 562)                         | P   | P   | P          |
| 578                                                           | Separate motor cooling, IP 44, 400 V, 50 Hz (fan axial, N-end) and prepared for hollow shaft tacho (Leine & Linde 562)    | P   | P   | P          |
| 486                                                           | Separate motor cooling (fan top, N-end) and prepared for DC tacho.                                                        | P   | P   | P          |
| 487                                                           | Separate motor cooling (fan axial, N-end) and prepared for hollow shaft pulse tacho (Lake Shore RIM 8500 or Avtron M285). | P   | P   | P          |
| <b>Separate motor cooling &amp; tacho; tacho included</b>     |                                                                                                                           |     |     |            |
| 428                                                           | Separate motor cooling (fan top, N-end) and Leine & Linde, type 510006361, pulse tacho                                    | P   | P   | P          |
| 429                                                           | Separate motor cooling (fan top, N-end) and Leine & Linde, type 861007455, hollow shaft pulse tacho                       | P   | P   | P          |
| 430                                                           | Separate motor cooling (fan top, N-end) and DC tacho, shaft extension type.                                               | P   | P   | P          |
| 475                                                           | Separate motor cooling (fan axial, N-end) and 512 hollow shaft pulse tacho (Leine & Linde equivalent)                     | P   | P   | P          |
| 476                                                           | Separate motor cooling (fan axial, N-end) and 1024 hollow shaft pulse tacho (Leine & Linde equivalent)                    | P   | P   | P          |
| 477                                                           | Separate motor cooling (fan axial, N-end) and 2048 hollow shaft pulse tacho (Leine & Linde equivalent)                    | P   | P   | P          |
| 488                                                           | Separate motor cooling (fan axial, N-end) and Lake Shore RIM 8500 pulse tacho mounted.                                    | P   | P   | P          |
| 489                                                           | Separate motor cooling (fan axial, N-end) and Avtron M285 pulse tacho mounted.                                            | P   | P   | P          |
| 576                                                           | Separate motor cooling (fan axial, N-end) and 1024 pulse tacho (L&L 562).                                                 | P   | P   | P          |
| 577                                                           | Separate motor cooling (fan axial, N-end) and 2048 pulse tacho (L&L 562).                                                 | P   | P   | P          |
| 580                                                           | Separate motor cooling, IP 44, 400 V, 50 Hz (fan axial, N-end) and 1024 pulse tacho (Leine & Linde 562).                  | P   | P   | P          |
| 581                                                           | Separate motor cooling, IP 44, 400 V, 50 Hz (fan axial, N-end) and 2048 pulse tacho (Leine & Linde 562).                  | P   | P   | P          |

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# Permanent magnet motors, standard construction for motors 500 and 560

## Standard construction

### Stator frame

- Cast iron EN-GJL-200 SFS-EN 1561

### Bearing shields

- Cast iron EN-GLJ-200 SFS-EN 1561

### Bearings

- Ball bearings
- Bearing insulation at N-end
- Bearings protection: Pt-100 1 pcs/bearing, 3-wire connection
- **500**
  - IM 1001: D-end 6330/C3, N-end 6330/C3
  - IM 3011: D-end 6330/C3, N-end 7330 BM
- **560**
  - IM 1001: D-end 6338/C3, N-end 6338/C3
  - IM 3011: D-end 6338/C3, N-end 7338 BM

### Axially locked bearings

- Axially locked at D-end in horizontal machine
- Axially locked at N-end in vertical machine

### Bearing seal

- Labyrinth seal in both ends

### Lubrication

- Regreasable bearings
- Grease nipple M10x1 DIN 71412

### SPM-nipples

- 1 pcs/bearing

### Rating and lubrication plate

- Stainless steel, EN 10088, thickness 0.5 mm

### Main terminal box

- Structural steel S235JRG2 – EN 10025, thickness 3 mm
- Screws: Steel 8.8, Delta-Tone 9000

### Connections

- Cable entries:
  - Undrilled gland plate
  - Roxtec EMC cable entry
  - Grounding locations on frame and terminal box (in- and outside)

### Auxiliary terminal box

- Material: aluminium
- Cable entries: M20 x 1.5 (2 pcs)
- Cable glands: included as standard
  - Material: nickel plated brass

### Fan

- Structural steel S235JRG2 – EN 10025

### Fan cover

- Structural steel S235JRG2 – EN 10025, thickness 3 mm

### Stator winding

- Form wound copper
- Insulation class F (155 °C)
- Winding protection: Pt-100 6 pieces, 3-wire connection

### Rotor

- Permanent magnet rotor

### Shaft

- One open keyway
- Shaft material: 42CrMo4 - EN 10083

### Balancing

- Rotor balanced with half key according to ISO 1940/1
  - Balancing grade G2.5

### Drain holes

- Drain holes at lowest part of the machine-
  - IM 1001 2 pcs in frame
  - IM 3011 2 pcs in D-end shield

### Cooling

- IC411
- IC416 (axially mounted blower unit)

### Mounting

- IM 1001 (horizontal machine)
- IM 3011 (vertical machine, shaft downwards)

### Ambient temperature

- -20 to +40°C

### Altitude

- ≤ 1000 m above sea level

### Protection

- IP55

### Application related standards:

- EMC

### Painting

- Paint System 1
  - Standard BS 5493
  - Colour Munsell 8B 4.5/3.25 / NCS 4822 B05G
  - Two-pack epoxy paint, thickness ≥ 180 µm

## Standard documentation

- Dimension drawing
- Connection diagram (main, auxiliary)
- Performance data of motor
- Maintenance manual
- Routine test report

## Standard tests

- Routine test

# Permanent magnet motors, optional construction for motors 500 and 560

## Optional specification

### Mounting

- IM 1002
  - Max. torque limited for N-end shaft
- IM 2001

### Cooling

- IC 416
  - top mounted blower unit, only for horizontal machines
- IC 417

### Ambient temperature

- Min limit -50 to -20 °C, to be checked case by case
- Max limit +40 to +60 °C, to be checked case by case

### Protection

- IP56

### Local or application related standards

- SD-CSA
  - Standard CSA
- SD-LRS
  - Standard LRS
- SD-DNV
  - Standard DnV
- SD-GL
  - Standard GL
- SD-BV
  - Standard BV
- SD-RINA
  - Standard RINA

## Optional constructions

### Balancing

- BL-SET
  - Rotor balanced with full key

### Shaft

- CM-SET
  - Machined coupling half, mounting only

### Bearings

- IN-SET1
  - Inpro-seal in D-end
- IN-SET2
  - Inpro-seal in N-end
- IN-SET3
  - Inpro-seal in D- and N-end
- GC-SET
  - Grease collector in D- and/or N-end
- IB-SET
  - Both bearings insulated, earth strap in D-end
- TL-SET
  - Transport locking device

### Main terminal box

- MT-SET1
  - Main terminal box in N-end (horizontal machines)
- MG-SET1
  - Cable glands for supply cables: Hawke
- MG-SET2
  - Provision for cable glands (no Roxtec): M-threads

### Auxiliary terminal boxes

- AS-SET
  - Separate terminal box for space heater and RTD's
- AM-SET
  - Special material: stainless steel AISI 304
- AG-SET1
  - Cable glands for control cables: Hawke

### Others

- PS-SET2
  - Paint system 2
- PS-SET4
  - Paint system 4
- DH-SET
  - Threaded drain plug in frame
- SS-SET
  - Bolts, nuts and washers made of stainless steel

## Optional accessories

### Control and protective equipment

#### General

- RT-SET1
  - RTD's with 4-wire connection
- RT-SET2
  - Duplex RTD's with 4-wire connection

#### Winding

- PY-SET1
  - Thermistors (PTC), 3 pcs set temperature 150 °C and 3 pcs 170 °C.
- TT-PT100-SET1
  - Transmitters for Pt-100, 3 pcs

#### Bearings

- AFB-TCK-SET1
  - Thermocouples, 1 pcs/bearing, type K (NiCr-Ni)
- AFB-TCT-SET1
  - Thermocouples, 1 pcs/bearing, type T (Cu-CuNi)
- AFB-TCJ-SET1
  - Thermocouples, 1 pcs/bearing, type J (Fe-CuNi)
- AFB-TCE-SET1
  - Thermocouples, 1 pcs/bearing, type E (NiCr-CuNi)
- TT-PT100-SET2
  - Transmitters for Pt-100 3 pcs for windings and 1 pc for each bearing
- TT-TC-SET1
  - Transmitters for thermocouple, 1 pc for each bearing
- AFB-DAT-SET1-HX
  - Dial type thermometer without contacts, 1 pcs/bearing
- AFB-DATC-SET1
  - Dial type thermometer with contacts, 1 pcs/bearing

#### Heating elements

Single phase, 50/60 Hz, 400 W (AMZ 0500) or 500 W (AMZ 0560)

- RE-SET1
  - Voltage range: 220 to 250 V
- RE-SET2
  - Voltage range: 110 to 120 V
- RE-SET3
  - Voltage range: 380 to 440 V

#### Pulse encoder

ABB standard type

- TAC-SET1
  - Pulse rate 1024 ppr
- TAC-SET2
  - Pulse rate 2048 ppr

#### Vibration transducers

- VIB-SPM-SET2-HX
  - Seismic type accelerometers mounted on the end shields, 2 pcs. Measuring direction horizontal.
- VIB-SPM-SET3-HX
  - 1 pc accelerometer mounted on end shield. Measuring direction axial.

### Foundation and site equipment

Foot mounting only

- MB-SET1
  - Mounting bolts (1 pc/foot or 8 pcs/flange)
- ZBSFBP
  - Adjusting screw package for concrete foundation
- DP-SET1
  - Dowel pins, 2 pcs
- ZBA-SET1
  - Shim package of stainless steel
- ZBA-SET2
  - Shims, 2 mm, 4 pcs
- FOST-SET
  - Foundation studs with anchor bolts, 1 pc/foot
- SOPL-A-SET
  - Sole plates with anchor bolts, 1 pc/motor side
- SOPL-SET
  - Sole plates without anchor bolts, 1 pc/motor side

### Others

- RC-SET
  - Rain canopy for vertical machines

### Optional documentation

- Main terminal box drawing
- Auxiliary terminal box drawing
- Rotor drawing

### Optional tests

- Type test

## Special construction

Note! All special constructions must be checked at the factory case by case.

## Special specification

### Cooling

- IC 71W
  - Water cooled, welded frame construction

## Special constructions

### Shaft

- SE-SET1
  - Special shaft extension at D-end, only motor size 500 (not applicable for foot- and flange mounted machine):  
D=160 mm, E=300 mm
- SE-SET2
  - Smaller shaft extension at D-end.
- TE-SET
  - Tapered shaft

### Main terminal box

- MT-SET2
  - Main terminal box on right or left side of the machine
- MM-SET1
  - Special material: hot zinc coated
- MM-SET2
  - Special material: stainless steel AISI 304

### Fan

- FM-SET1
  - Special material: aluminium
- FM-SET2
  - Special material: stainless steel AISI 304

### Control and protective equipment

- CU-SET
  - Winding protection: Cu10, 6 pcs 3-wire connection
- PI-SET
  - Pt100 in motor air circuit: 1 pc in D-end 3 wire connection

### Others

- BR-SET1
  - Brakes
- BR-SET2
  - Backstops

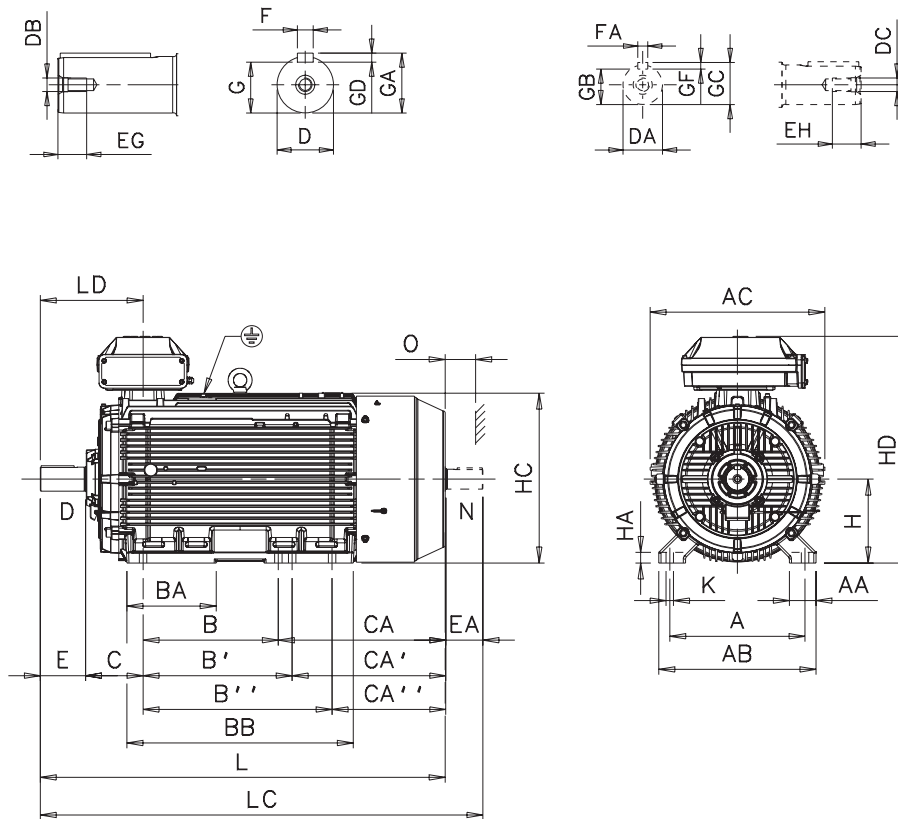
# Permanent magnet motors

## Cooling designation: IC 411

# Sizes 280-315

## Dimension drawings

Foot-mounted: IM B3 (IM 1001)



| Motor size | A   | AA  | AB  | AC  | B   | B'  | B'' | BA  | BB  | C   | CA  | CA' | CA'' | D  | DA | DB  | DC  | E   | EA  | EG | EH |
|------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|------|----|----|-----|-----|-----|-----|----|----|
| 280 SM_    | 457 | 84  | 530 | 577 | 368 | 419 | -   | 147 | 506 | 190 | 400 | 349 | -    | 75 | 65 | M20 | M20 | 140 | 140 | 40 | 40 |
| 315 SM_    | 508 | 100 | 590 | 654 | 406 | 457 | -   | 180 | 558 | 216 | 420 | 369 | -    | 80 | 75 | M20 | M20 | 170 | 140 | 40 | 40 |
| 315 ML_    | 508 | 100 | 590 | 654 | 457 | 508 | -   | 212 | 669 | 216 | 480 | 429 | -    | 90 | 75 | M24 | M20 | 170 | 140 | 48 | 40 |
| 315 LK_    | 508 | 100 | 590 | 654 | 508 | 560 | 710 | 336 | 851 | 216 | 635 | 583 | 433  | 90 | 75 | M24 | M20 | 170 | 140 | 48 | 40 |

| Motor size | F  | FA | G    | GA   | GB   | GC   | GD | GF | H   | HA | HC  | HD <sup>1)</sup> | HD <sup>2)</sup> | K  | L    | LC   | LD  | O   |
|------------|----|----|------|------|------|------|----|----|-----|----|-----|------------------|------------------|----|------|------|-----|-----|
| 280 SM_    | 20 | 18 | 67.5 | 79.5 | 58   | 69   | 12 | 11 | 280 | 31 | 564 | 762              | -                | 24 | 1088 | 1236 | 336 | 100 |
| 315 SM_    | 22 | 20 | 71   | 85   | 67.5 | 79.5 | 14 | 12 | 315 | 40 | 639 | 852              | -                | 28 | 1204 | 1352 | 386 | 115 |
| 315 ML_    | 25 | 20 | 81   | 95   | 67.5 | 79.5 | 14 | 12 | 315 | 40 | 639 | 852              | -                | 28 | 1315 | 1463 | 386 | 115 |
| 315 LK_    | 25 | 20 | 81   | 95   | 67.5 | 79.5 | 14 | 12 | 315 | 40 | 639 | 852              | 880              | 28 | 1521 | 1669 | 386 | 115 |

Tolerances:

|       |                 |   |         |
|-------|-----------------|---|---------|
| A, B  | ± 0,8           | F | ISO h9  |
| C, CA | ± 0,8           | H | +0 -0,5 |
| D     | ISO k6 < Ø 50mm | N | ISO j6  |
|       | ISO m6 > Ø 50mm |   |         |

<sup>1)</sup> Terminal box 370

<sup>2)</sup> Terminal box 750

Above table gives the main dimensions in mm.

For detailed drawings please see our web site  
'[www.abb.com/motors&drives](http://www.abb.com/motors&drives)' or contact us.

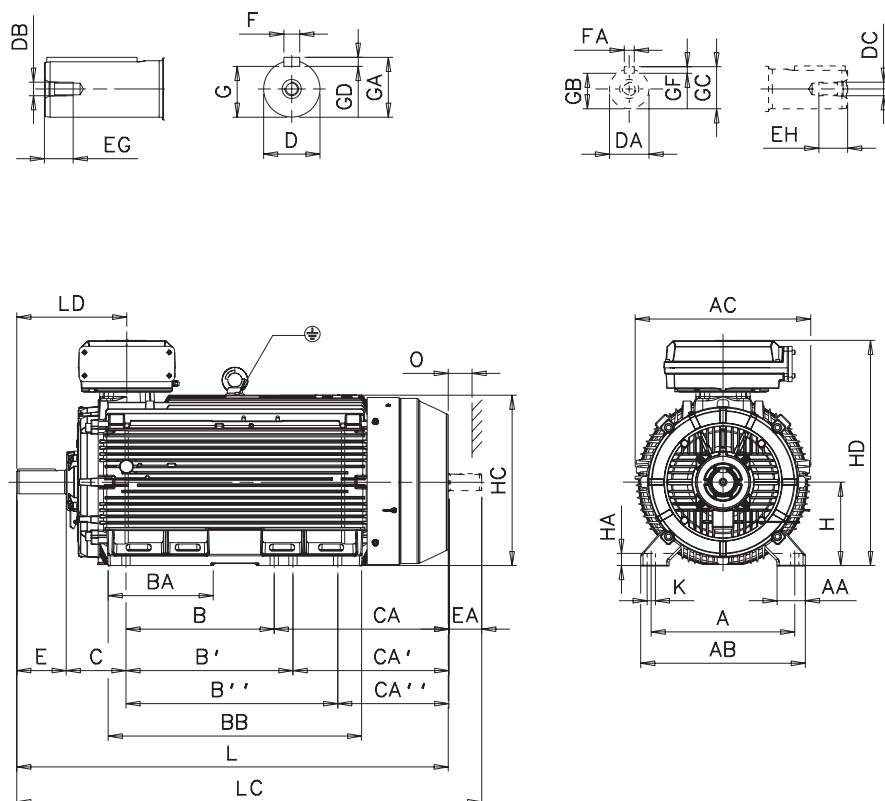
# Permanent magnet motors

# Sizes 355-400

## Cooling designation: IC 411

## Dimension drawings

Foot-mounted: IM B3 (IM 1001)



| Motor size | A   | AA  | AB  | AC  | B   | B'   | B'' | BA  | BB   | C   | CA  | CA' | CA'' | D   | DA | DB  | DC  | E   | EA  | EG | EH |
|------------|-----|-----|-----|-----|-----|------|-----|-----|------|-----|-----|-----|------|-----|----|-----|-----|-----|-----|----|----|
| 355 SM_    | 610 | 120 | 700 | 746 | 500 | 560  | -   | 221 | 722  | 254 | 525 | 465 | -    | 100 | 90 | M24 | M24 | 210 | 170 | 50 | 48 |
| 355 ML_    | 610 | 120 | 700 | 746 | 560 | 630  | -   | 267 | 827  | 254 | 500 | 570 | -    | 100 | 90 | M24 | M24 | 210 | 170 | 50 | 48 |
| 355 LK_    | 610 | 120 | 700 | 746 | 630 | 710  | 900 | 447 | 1077 | 254 | 750 | 670 | 480  | 100 | 90 | M24 | M24 | 210 | 170 | 50 | 48 |
| 400 L_     | 710 | 150 | 840 | 834 | 900 | 1000 | -   | 410 | 1156 | 224 | 567 | 467 | -    | 110 | 90 | M24 | M24 | 210 | 170 | 50 | 48 |

| Motor size | F  | FA | G   | GA  | GB | GC | GD | GF | H   | HA | HC  | HD <sup>1)</sup> | HD <sup>2)</sup> | K  | L    | LC   | LD  | O   |
|------------|----|----|-----|-----|----|----|----|----|-----|----|-----|------------------|------------------|----|------|------|-----|-----|
| 355 SM_    | 28 | 25 | 90  | 106 | 81 | 95 | 16 | 14 | 355 | 52 | 725 | 944              | 958              | 35 | 1479 | 1659 | 467 | 130 |
| 355 ML_    | 28 | 25 | 90  | 106 | 81 | 95 | 16 | 14 | 355 | 52 | 725 | 944              | 958              | 35 | 1584 | 1764 | 467 | 130 |
| 355 LK_    | 28 | 25 | 90  | 106 | 81 | 95 | 16 | 14 | 355 | 52 | 725 | 944              | 958              | 35 | 1834 | 2014 | 467 | 130 |
| 400 L_     | 28 | 25 | 100 | 116 | 81 | 95 | 16 | 14 | 400 | 45 | 814 | -                | 1045             | 35 | 1891 | 2071 | 498 | 150 |

Tolerances:

|       |                 |   |         |
|-------|-----------------|---|---------|
| A, B  | ± 0,8           | F | ISO h9  |
| C, CA | ± 0,8           | H | +0 -0,5 |
| D     | ISO k6 < Ø 50mm | N | ISO j6  |
|       | ISO m6 > Ø 50mm |   |         |

<sup>1)</sup> Terminal box 370

<sup>2)</sup> Terminal box 750

Above table gives the main dimensions in mm.

For detailed drawings please see our web site  
'[www.abb.com/motors&drives](http://www.abb.com/motors&drives)' or contact us.

# Permanent magnet motors

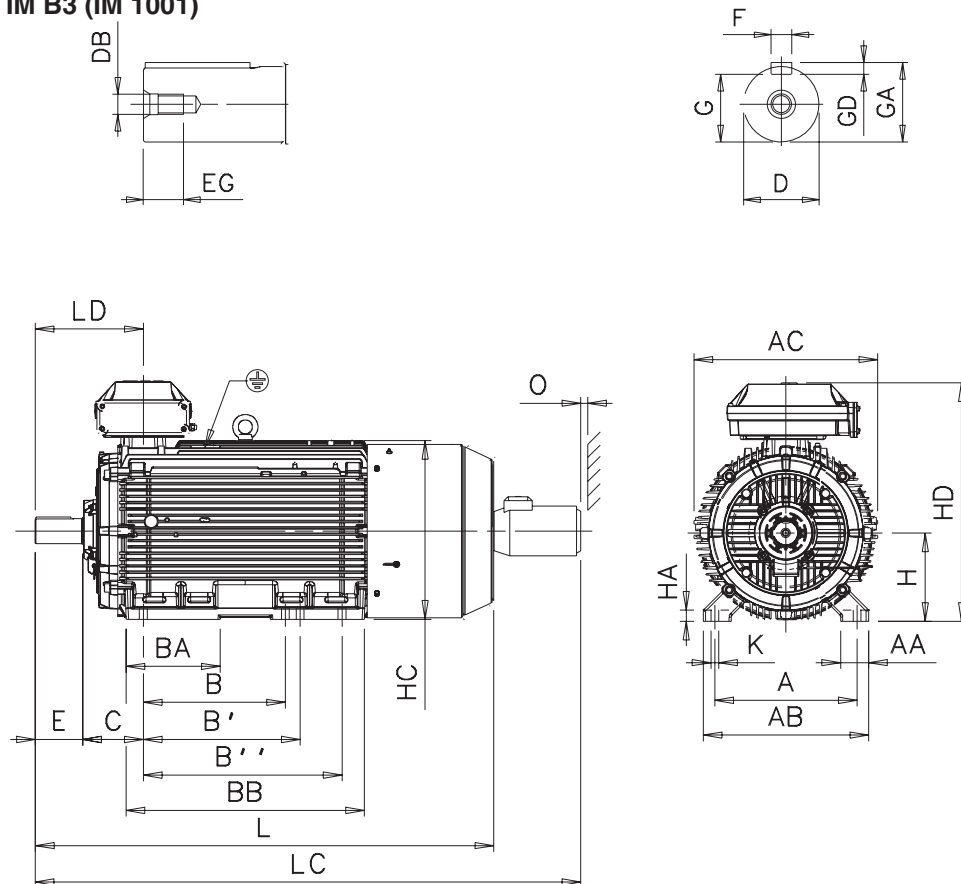
# Sizes 280 - 315

Cooling designation: IC 416, variant code 183;

Separate motor cooling, fan axial, N-end

## Dimension drawings

Foot-mounted: IM B3 (IM 1001)



| Motor size | A   | AA  | AB  | AC  | B   | B'  | B'' | BA  | BB  | C   | D  | DB  | E   | EG | F  |
|------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|----|-----|-----|----|----|
| 280 SM_    | 457 | 84  | 530 | 577 | 368 | 419 | -   | 147 | 506 | 190 | 75 | M20 | 140 | 40 | 20 |
| 315 SM_    | 508 | 100 | 590 | 654 | 406 | 457 | -   | 180 | 558 | 216 | 80 | M20 | 170 | 40 | 22 |
| 315 ML_    | 508 | 100 | 590 | 654 | 457 | 508 | -   | 212 | 669 | 216 | 90 | M24 | 170 | 48 | 25 |
| 315 LK_    | 508 | 100 | 590 | 654 | 508 | 560 | 710 | 336 | 851 | 216 | 90 | M24 | 170 | 48 | 25 |

| Motor size | G    | GA   | GD | H   | HA | HC  | HD <sup>1)</sup> | HD <sup>2)</sup> | K  | L    | LC   | LD  | O  |
|------------|------|------|----|-----|----|-----|------------------|------------------|----|------|------|-----|----|
| 280 SM_    | 67.5 | 79.5 | 12 | 280 | 31 | 564 | 762              | -                | 24 | 1194 | 1472 | 336 | 25 |
| 315 SM_    | 71   | 85   | 14 | 315 | 40 | 639 | 852              | -                | 28 | 1304 | 1582 | 386 | 25 |
| 315 ML_    | 81   | 95   | 14 | 315 | 40 | 639 | 852              | -                | 28 | 1414 | 1692 | 386 | 25 |
| 315 LK_    | 81   | 95   | 14 | 315 | 40 | 639 | 852              | 880              | 28 | 1638 | 1950 | 386 | 25 |

Tolerances:

|       |                 |   |         |
|-------|-----------------|---|---------|
| A, B  | ± 0,8           | F | ISO h9  |
| C, CA | ± 0,8           | H | +0 -0,5 |
| D     | ISO k6 < Ø 50mm | N | ISO j6  |
|       | ISO m6 > Ø 50mm |   |         |

<sup>1)</sup> Terminal box 370

<sup>2)</sup> Terminal box 750

Above table gives the main dimensions in mm.

For detailed drawings please see our web site  
'[www.abb.com/motors&drives](http://www.abb.com/motors&drives)' or contact us.

# Permanent magnet motors

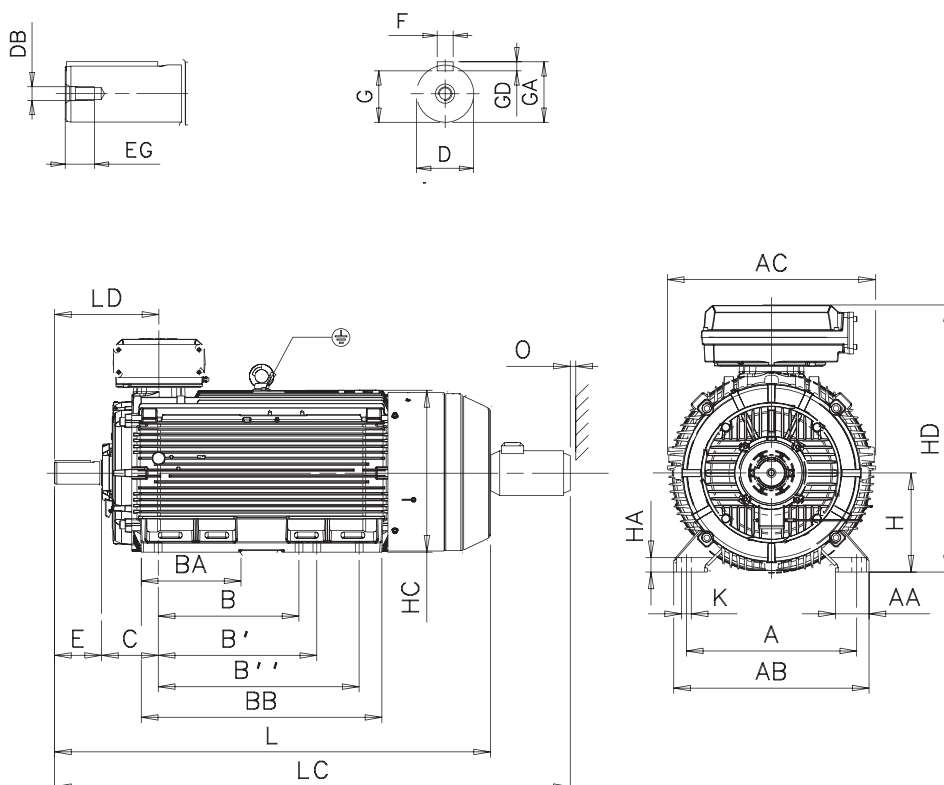
Sizes 355 - 400

Cooling designation: IC 416, variant code 183;

Separate motor cooling, fan axial, N-end

## Dimension drawings

Foot-mounted: IM B3 (IM 1001)



| Motor size | A   | AA  | AB  | AC  | B   | B'   | B'' | BA  | BB   | C   | D   | DB  | E   | EG | F  |
|------------|-----|-----|-----|-----|-----|------|-----|-----|------|-----|-----|-----|-----|----|----|
| 355 SM_    | 610 | 120 | 700 | 746 | 500 | 560  | -   | 221 | 722  | 254 | 100 | M24 | 210 | 50 | 28 |
| 355 ML_    | 610 | 120 | 700 | 746 | 560 | 630  | -   | 267 | 827  | 254 | 100 | M24 | 210 | 50 | 28 |
| 355 LK_    | 610 | 120 | 700 | 746 | 630 | 710  | 900 | 447 | 1077 | 254 | 100 | M24 | 210 | 50 | 28 |
| 400 L_     | 710 | 150 | 840 | 834 | 900 | 1000 | -   | 410 | 1156 | 224 | 110 | M24 | 210 | 50 | 28 |

| Motor size | G   | GA  | GD | H   | HA | HC  | HD <sup>1)</sup> | HD <sup>2)</sup> | K  | L    | LC   | LD  | O  |
|------------|-----|-----|----|-----|----|-----|------------------|------------------|----|------|------|-----|----|
| 355 SM_    | 90  | 106 | 16 | 355 | 52 | 725 | 944              | 958              | 35 | 1594 | 1905 | 467 | 25 |
| 355 ML_    | 90  | 106 | 16 | 355 | 52 | 725 | 944              | 958              | 35 | 1699 | 2056 | 467 | 25 |
| 355 LK_    | 90  | 106 | 16 | 355 | 52 | 725 | 944              | 958              | 35 | 1953 | 2310 | 467 | 25 |
| 400 L_     | 100 | 116 | 16 | 400 | 45 | 814 | -                | 1045             | 35 | 1996 | 2353 | 498 | 25 |

Tolerances:

|       |                                    |   |         |
|-------|------------------------------------|---|---------|
| A, B  | ± 0,8                              | F | ISO h9  |
| C, CA | ± 0.8                              | H | +0 -0.5 |
| D     | ISO k6 < Ø 50mm<br>ISO m6 > Ø 50mm | N | ISO j6  |

<sup>1)</sup> Terminal box 370

<sup>2)</sup> Terminal box 750

Above table gives the main dimensions in mm.

For detailed drawings please see our web site  
'[www.abb.com/motors&drives](http://www.abb.com/motors&drives)' or contact us.

# Permanent magnet motors

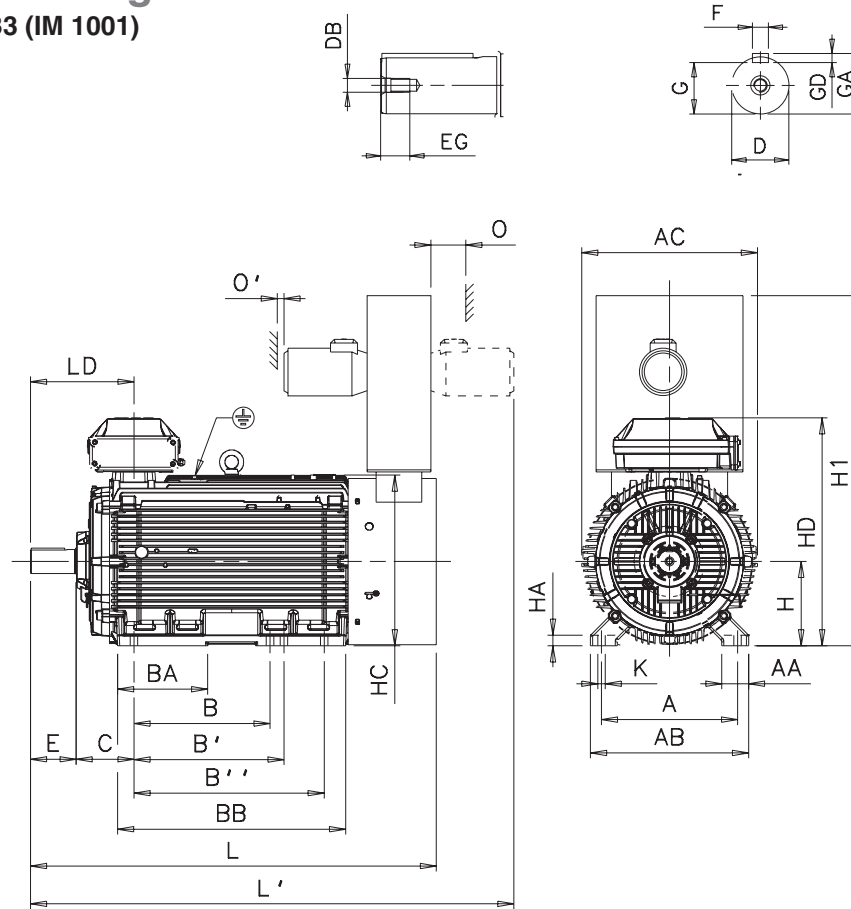
# Sizes 280 - 315

Cooling designation: IC 416, variant code 422;

Separate motor cooling, fan top or side, N-end.

## Dimension drawings

Foot-mounted: IM B3 (IM 1001)



| Motor size | A   | AA  | AB  | AC  | B   | B'  | B'' | BA  | BB  | C   | D  | DB  | E   | EG | F  |
|------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|----|-----|-----|----|----|
| 280 SM_    | 457 | 84  | 530 | 577 | 368 | 419 | -   | 147 | 506 | 190 | 75 | M20 | 140 | 40 | 20 |
| 315 SM_    | 508 | 100 | 590 | 654 | 406 | 457 | -   | 180 | 558 | 216 | 80 | M20 | 170 | 40 | 22 |
| 315 ML_    | 508 | 100 | 590 | 654 | 457 | 508 | -   | 212 | 669 | 216 | 90 | M24 | 170 | 48 | 25 |
| 315 LK_    | 508 | 100 | 590 | 654 | 508 | 560 | 710 | 336 | 851 | 216 | 90 | M24 | 170 | 48 | 25 |

| Motor-size | G    | GA   | GD | H   | HA | HC  | HD <sup>1)</sup> | HD <sup>2)</sup> | H1   | K  | L    | L'   | LD  | O   | O' |
|------------|------|------|----|-----|----|-----|------------------|------------------|------|----|------|------|-----|-----|----|
| 280 SM_    | 67.5 | 79.5 | 12 | 280 | 31 | 564 | 762              | -                | 1245 | 24 | 1043 | 1333 | 336 | 130 | 25 |
| 315 SM_    | 71   | 85   | 14 | 315 | 40 | 639 | 852              | -                | 1316 | 28 | 1246 | 1535 | 386 | 130 | 25 |
| 315 ML_    | 81   | 95   | 14 | 315 | 40 | 639 | 852              | -                | 1316 | 28 | 1356 | 1645 | 386 | 130 | 25 |
| 315 LK_    | 81   | 95   | 14 | 315 | 40 | 639 | 852              | 880              | 1316 | 28 | 1516 | 1805 | 386 | 130 | 25 |

Tolerances:

|       |                 |   |         |
|-------|-----------------|---|---------|
| A, B  | ± 0,8           | F | ISO h9  |
| C, CA | ± 0.8           | H | +0 -0.5 |
| D     | ISO k6          | N | ISO j6  |
|       | ISO m6 > Ø 50mm |   |         |

<sup>1)</sup> Terminal box 370

<sup>2)</sup> Terminal box 750

Above table gives the main dimensions in mm.

For detailed drawings please see our web site  
'[www.abb.com/motors&drives](http://www.abb.com/motors&drives)' or contact us.

# Permanent magnet motors

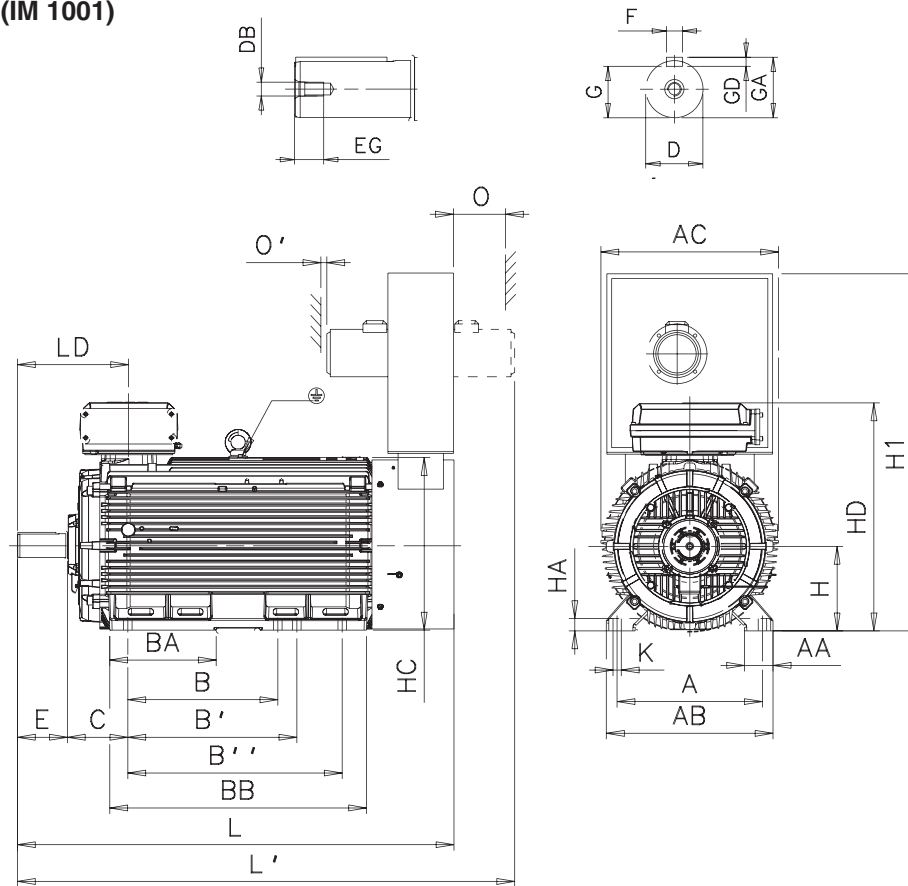
Sizes 355 - 400

Cooling designation: IC 416, variant code 422;

Separate motor cooling, fan top or side, N-end.

## Dimension drawings

Foot-mounted: IM B3 (IM 1001)



| Motor size | A   | AA  | AB  | AC  | B   | B'   | B'' | BA  | BB   | C   | D   | DB  | E   | EG | F  |
|------------|-----|-----|-----|-----|-----|------|-----|-----|------|-----|-----|-----|-----|----|----|
| 355 SM_    | 610 | 120 | 700 | 746 | 500 | 560  | -   | 221 | 722  | 254 | 100 | M24 | 210 | 50 | 28 |
| 355 ML_    | 610 | 120 | 700 | 746 | 560 | 630  | -   | 267 | 827  | 254 | 100 | M24 | 210 | 50 | 28 |
| 355 LK_    | 610 | 120 | 700 | 746 | 630 | 710  | 900 | 447 | 1077 | 254 | 100 | M24 | 210 | 50 | 28 |
| 400 L_     | 710 | 150 | 840 | 834 | 900 | 1000 | -   | 410 | 1156 | 224 | 110 | M24 | 210 | 50 | 28 |

| Motor-size | G   | GA  | GD | H   | HA | HC  | HD <sup>1)</sup> | HD <sup>2)</sup> | H1   | K  | L    | L'   | LD  | O   | O' |
|------------|-----|-----|----|-----|----|-----|------------------|------------------|------|----|------|------|-----|-----|----|
| 355 SM_    | 90  | 106 | 16 | 355 | 52 | 725 | 944              | 958              | 1500 | 35 | 1514 | 1771 | 467 | 130 | 25 |
| 355 ML_    | 90  | 106 | 16 | 355 | 52 | 725 | 944              | 958              | 1500 | 35 | 1584 | 1841 | 467 | 130 | 25 |
| 355 LK_    | 90  | 106 | 16 | 355 | 52 | 725 | 944              | 958              | 1500 | 35 | 1834 | 2091 | 467 | 130 | 25 |
| 400 L_     | 100 | 116 | 16 | 400 | 45 | 814 | -                | 1045             | 1593 | 35 | 1891 | 2148 | 498 | 130 | 25 |

Tolerances:

|       |                 |   |         |
|-------|-----------------|---|---------|
| A, B  | ± 0,8           | F | ISO h9  |
| C, CA | ± 0,8           | H | +0 -0,5 |
| D     | ISO k6          | N | ISO j6  |
|       | ISO m6 > Ø 50mm |   |         |

<sup>1)</sup> Terminal box 370

<sup>2)</sup> Terminal box 750

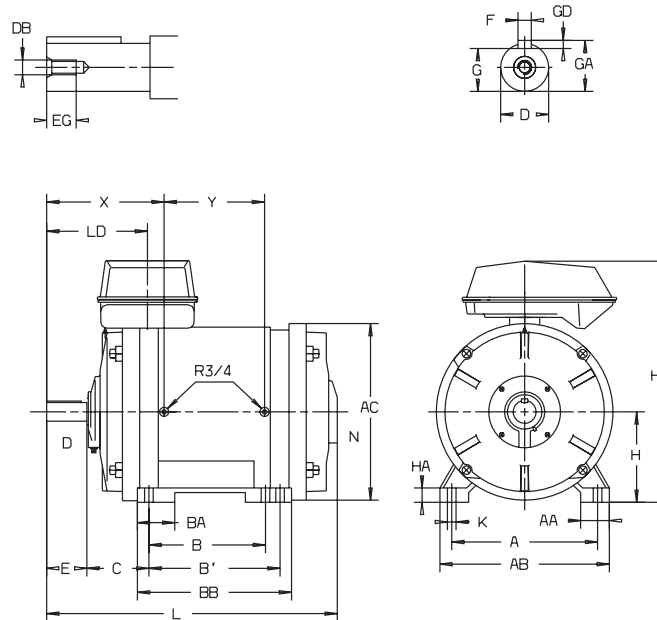
Above table gives the main dimensions in mm.

For detailed drawings please see our web site  
'[www.abb.com/motors&drives](http://www.abb.com/motors&drives)' or contact us.

## Cooling designation: Water cooled

## Dimension drawings

### Foot-mounted



| Motor size | A   | AA  | AB  | AC  | B   | B'  | BA  | BB  | C   | D <sup>1)</sup> | DB  | E   | EG |
|------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----------------|-----|-----|----|
| 280 SM_    | 457 | 85  | 530 | 544 | 368 | 419 | 135 | 470 | 190 | 75              | M20 | 140 | 40 |
| 315 SM_    | 508 | 100 | 590 | 615 | 406 | 457 | 130 | 537 | 216 | 80              | M20 | 170 | 40 |
| 315 ML_    | 508 | 100 | 590 | 615 | 457 | 508 | 130 | 588 | 216 | 90              | M24 | 170 | 48 |
| 315 LK_    | 508 | 100 | 590 | 615 | 508 | 710 | 130 | 805 | 216 | 90              | M24 | 170 | 48 |

| Motor size | F  | G    | GA   | GD | H   | HA <sup>1)</sup> | HD  | K  | L    | LD  | X   | Y   |
|------------|----|------|------|----|-----|------------------|-----|----|------|-----|-----|-----|
| 280 SM_    | 20 | 67.5 | 79.5 | 12 | 280 | 40               | 745 | 24 | 932  | 332 | 390 | 300 |
| 315 SM_    | 22 | 71   | 85   | 14 | 315 | 50               | 840 | 30 | 1042 | 381 | 440 | 350 |
| 315 ML_    | 25 | 81   | 95   | 14 | 315 | 50               | 840 | 30 | 1093 | 381 | 440 | 400 |
| 315 LK_    | 25 | 81   | 95   | 14 | 315 | 50               | 840 | 30 | 1310 | 381 | 440 | 420 |

<sup>1)</sup> Tolerances:  
D ISO m6  
H ISO 0, -1.0

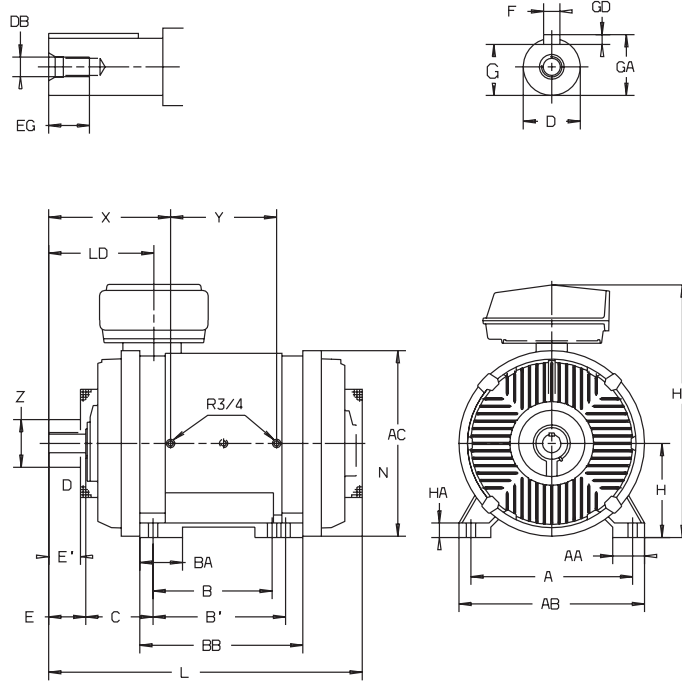
Above table gives the main dimensions in mm.

For detailed drawings please see our web site  
'[www.abb.com/motors&drives](http://www.abb.com/motors&drives)' or contact us.

Cooling designation: Water cooled

## Dimension drawings

Foot-mounted



| Motor size | A             | AA  | AB  | AC  | B   | B'  | BA  | BB   | C   | D   | DB  | E   | E'  | EG |
|------------|---------------|-----|-----|-----|-----|-----|-----|------|-----|-----|-----|-----|-----|----|
| 355 SM_    | 610           | 120 | 700 | 700 | 500 | 560 | 161 | 667  | 254 | 100 | M24 | 210 | 190 | 48 |
| 355 ML_    | 610           | 120 | 700 | 700 | 560 | 630 | 161 | 772  | 254 | 100 | M24 | 210 | 190 | 48 |
| 355 LK_    | 610           | 120 | 700 | 700 | 630 | 900 | 161 | 1028 | 254 | 100 | M24 | 210 | 190 | 45 |
| 400 L_     | <sup>3)</sup> |     |     |     |     |     |     |      |     |     |     |     |     |    |

| Motor size | F             | G  | GA  | GD | H   | HA <sup>1)</sup> | HD  | K  | L    | LD  | X   | Y   | Z <sup>2)</sup> |
|------------|---------------|----|-----|----|-----|------------------|-----|----|------|-----|-----|-----|-----------------|
| 355 SM_    | 28            | 90 | 106 | 16 | 355 | 55               | 955 | 35 | 1282 | 467 | 530 | 450 | 180             |
| 355 ML_    | 28            | 90 | 106 | 16 | 355 | 55               | 955 | 35 | 1387 | 467 | 530 | 550 | 180             |
| 355 LK_    | 28            | 90 | 106 | 16 | 355 | 55               | 955 | 35 | 1643 | 467 | 530 | 800 | 180             |
| 400 L_     | <sup>3)</sup> |    |     |    |     |                  |     |    |      |     |     |     |                 |

<sup>1)</sup> Tolerances:

D ISO m6

H ISO 0, -1.0

<sup>2)</sup> Note: Motor sizes 355 to 400 with a bearing fan.

<sup>3)</sup> On request

Above table gives the main dimensions in mm.

For detailed drawings please see our web site '[www.abb.com/motors&drives](http://www.abb.com/motors&drives)' or contact us.

# Permanent magnet motors, frame sizes 280 to 400

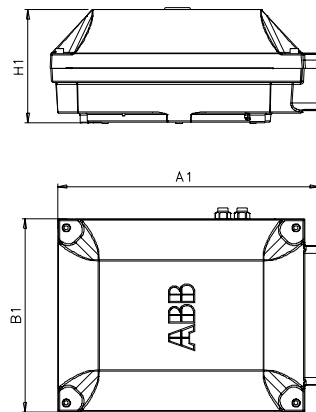
## Dimension drawings

### Terminal boxes, standard design with 6 terminals

See section 'Terminal box for frame sizes 280 to 400' for terminal box type.

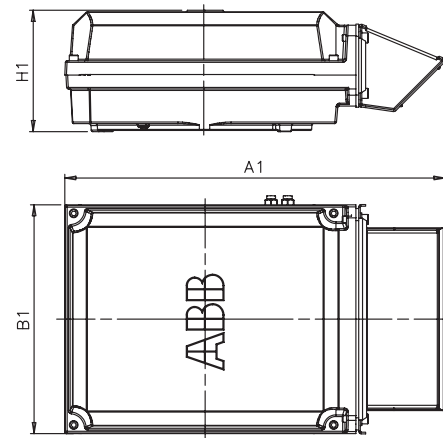
#### Top-mounted

Terminal boxes 210, 370



#### Top-mounted

Terminal box 750 + adapter



| Motor sizes 280 - 400 | A1  | B1  | H1  |
|-----------------------|-----|-----|-----|
| Terminal box type     |     |     |     |
| 210                   | 416 | 306 | 177 |
| 370                   | 451 | 347 | 200 |
| 750 top-mounted       | 686 | 413 | 219 |

For motor dimensions please see dimension drawings on earlier pages or on our web site '[www.abb.com/motors&drives](http://www.abb.com/motors&drives)'.

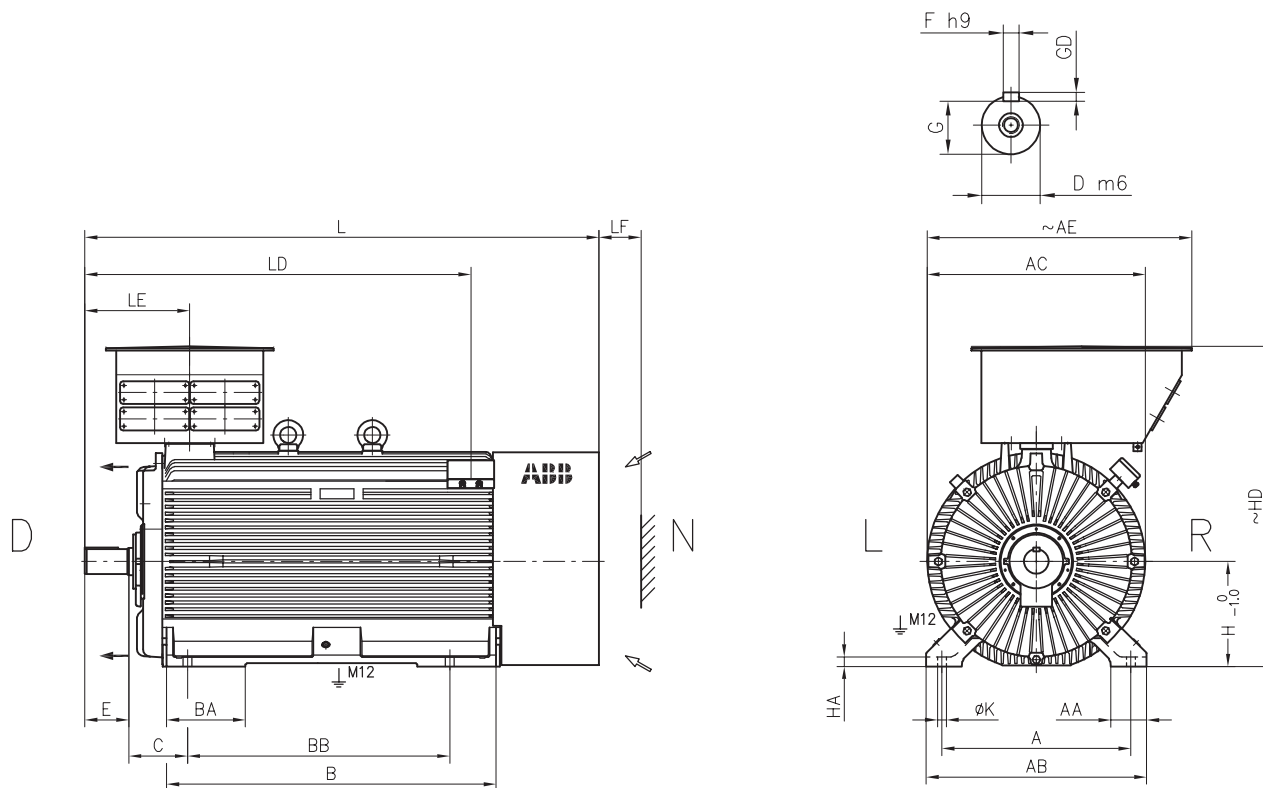
# Permanent magnet motors

# Sizes 500 and 560

Cooling designation: IC 411

## Dimension drawings

Foot-mounted: IM B3 (IM 1001)



| Motor<br>AMZ | Poles | A    | AA  | AB   | AC   | AE   | B    | BA  | BB   | C   | D   | E   | F  | G   | GD | H   |
|--------------|-------|------|-----|------|------|------|------|-----|------|-----|-----|-----|----|-----|----|-----|
| 0500L        | 10    | 900  | 170 | 1050 | 1035 | 1265 | 1570 | 375 | 1250 | 280 | 140 | 250 | 36 | 128 | 20 | 500 |
| 0560L        | 10    | 1000 | 230 | 1170 | 1190 | 1340 | 1940 | 620 | 1600 | 400 | 180 | 300 | 45 | 165 | 25 | 560 |

| Motor<br>AMZ | HA | HD   | K  | L    | LD   | LE  | LF  |
|--------------|----|------|----|------|------|-----|-----|
| 0500L        | 45 | 1530 | 42 | 2535 | 1880 | 540 | 200 |
| 0560L        | 50 | 1675 | 48 | 3065 | 2350 | 630 | 250 |

Above table gives the main dimensions in mm.

For detailed drawings please see our web site  
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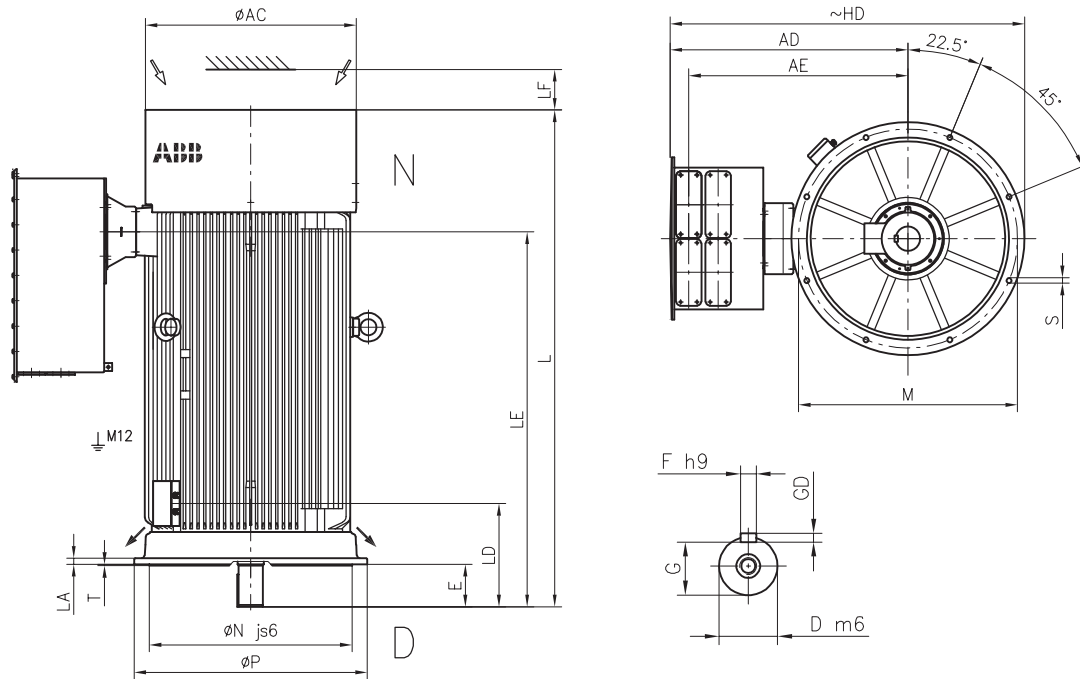
# Permanent magnet motors

# Sizes 500 and 560

Cooling designation: IC 411

## Dimension drawings

Flange-mounted: IM V1 (IM 3011)



| Motor<br>AMZ | Poles | AC   | AD   | AE   | D   | E   | F  | G   | GD | HD   | L    | LA | LD  | LE   | LF  |
|--------------|-------|------|------|------|-----|-----|----|-----|----|------|------|----|-----|------|-----|
| 0500L        | 10    | 1040 | 1175 | 1085 | 140 | 250 | 36 | 128 | 20 | 1750 | 2535 | 30 | 550 | 1890 | 200 |
| 0560L        | 10    | 1190 | 1260 | 1170 | 180 | 300 | 45 | 165 | 25 | 1965 | 3065 | 60 | 650 | 2370 | 250 |

| Motor<br>AMZ | M    | N    | P    | S  | T |
|--------------|------|------|------|----|---|
| 0500L        | 1080 | 1000 | 1150 | 28 | 6 |
| 0560L        | 1320 | 1250 | 1400 | 28 | 6 |

Above table gives the main dimensions in mm.

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# Permanent magnet motors

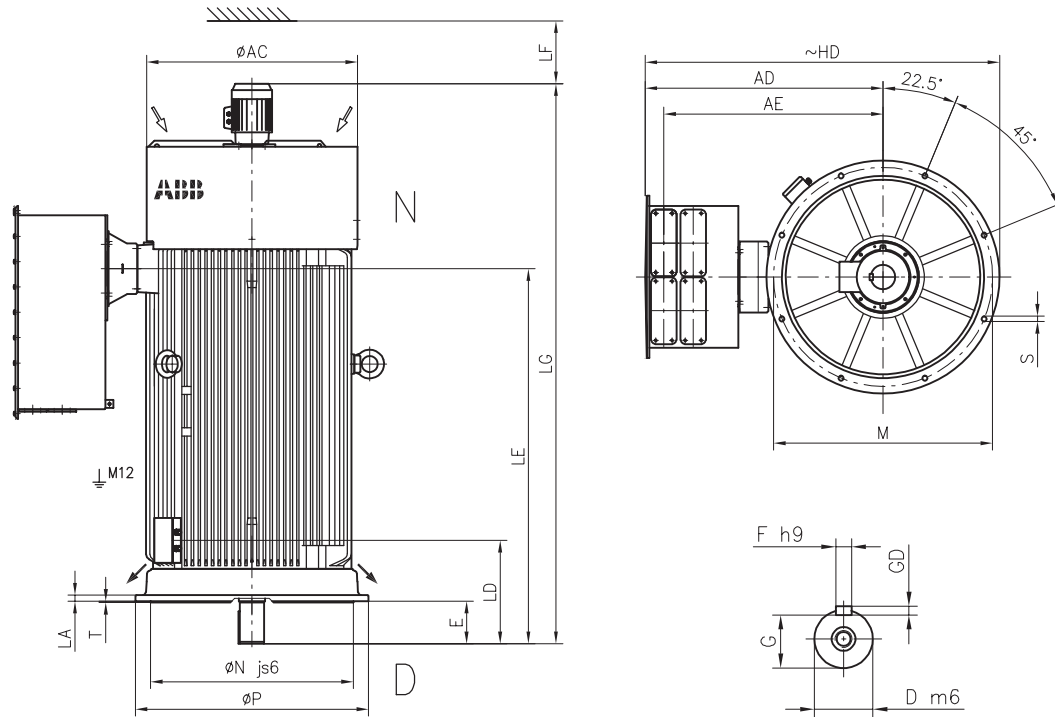
Sizes 500 to 560

Cooling designation: IC 416

Separate motor cooling, fan axial, N-end

## Dimension drawings

Flange-mounted: IM V1 (IM 3011)



| Motor<br>AMZ | Poles | AC   | AD   | AE   | D   | E   | F  | G   | GD | HD   | LA | LD  | LE   |
|--------------|-------|------|------|------|-----|-----|----|-----|----|------|----|-----|------|
| 0500L        | 10    | 1040 | 1175 | 1085 | 140 | 250 | 36 | 128 | 20 | 1750 | 30 | 550 | 1890 |
| 0560L        | 10    | 1190 | 1260 | 1170 | 180 | 300 | 45 | 165 | 25 | 1965 | 60 | 650 | 2370 |

| Motor<br>AMZ | LF  | LG   | M    | N    | P    | S  | T |
|--------------|-----|------|------|------|------|----|---|
| 0500L        | 310 | 2850 | 1080 | 1000 | 1150 | 28 | 6 |
| 0560L        | 300 | 3410 | 1320 | 1250 | 1400 | 28 | 6 |

Above table gives the main dimensions in mm.

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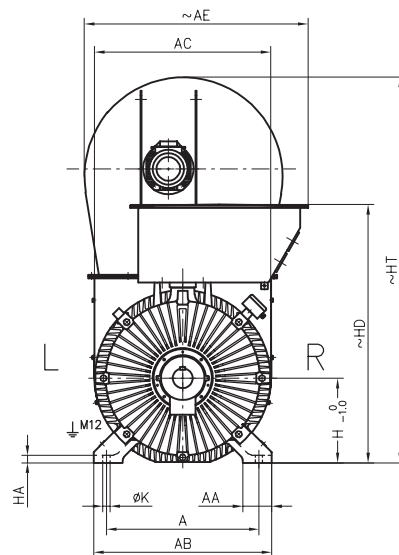
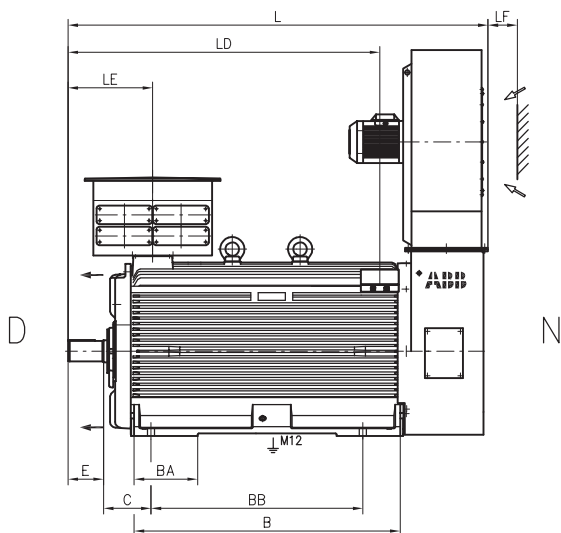
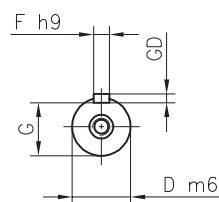
# Permanent magnet motors

Cooling designation: IC 416

Separate motor cooling, fan top , N-end.

## Dimension drawings

Foot-mounted: IM B3 (IM 1001)



| Motor<br>AMZ | Poles | A    | AA  | AB   | AC   | AE   | B    | BA  | BB   | C   | D   | E   | F  | G   |
|--------------|-------|------|-----|------|------|------|------|-----|------|-----|-----|-----|----|-----|
| 0500L        | 10    | 900  | 170 | 1050 | 1050 | 1325 | 1570 | 375 | 1250 | 280 | 140 | 250 | 36 | 128 |
| 0560L        | 10    | 1000 | 230 | 1170 | 1200 | 1345 | 1940 | 620 | 1600 | 400 | 180 | 300 | 45 | 165 |

| Motor<br>AMZ | GD | H   | HA | HD   | HT   | K  | L    | LD   | LE  | LF  |
|--------------|----|-----|----|------|------|----|------|------|-----|-----|
| 0500L        | 20 | 500 | 45 | 1530 | 2280 | 42 | 2525 | 1880 | 540 | 200 |
| 0560L        | 25 | 560 | 50 | 1675 | 2400 | 48 | 3055 | 2350 | 630 | 250 |

Above table gives the main dimensions in mm.

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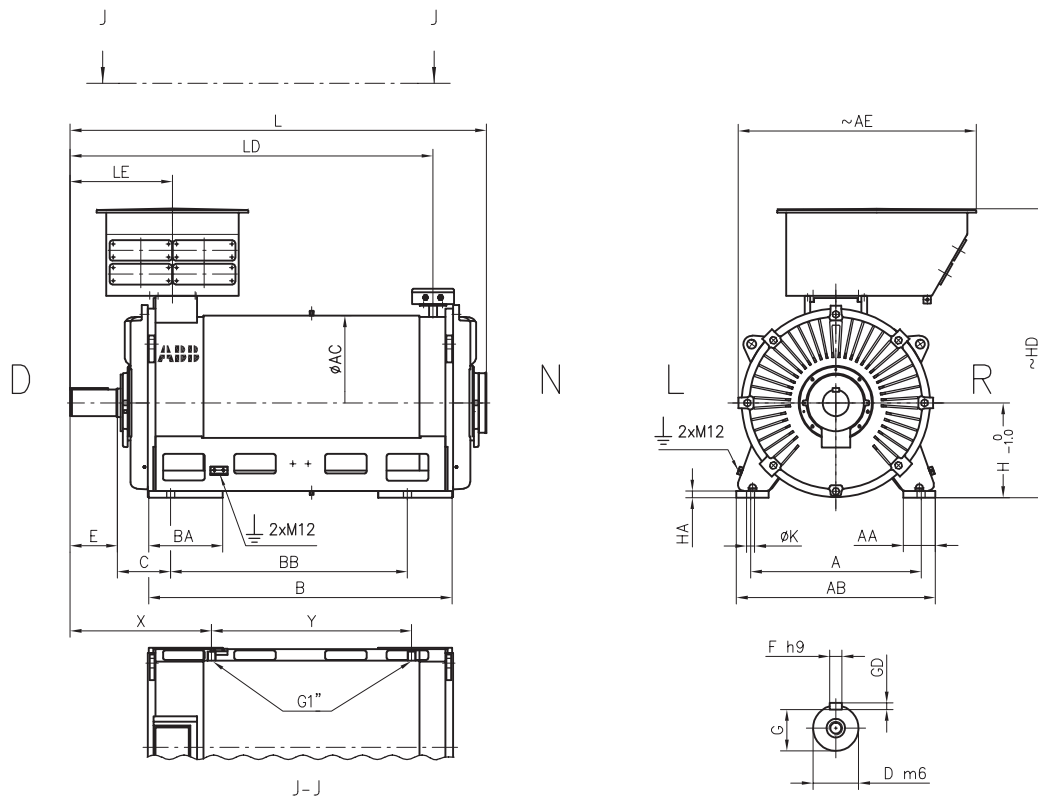
# Permanent magnet motors

Sizes 500 to 560

Cooling designation: IC71W

Dimension drawings

Foot-mounted: IM B3 (IM 1001)



| Motor<br>AMZ | Poles | A    | AA  | AB   | AC   | AE   | B    | BA  | BB   | C   | D   | E   | F  | G   |
|--------------|-------|------|-----|------|------|------|------|-----|------|-----|-----|-----|----|-----|
| 0500L        | 10    | 900  | 170 | 1050 | 920  | 1265 | 1600 | 390 | 1250 | 280 | 140 | 250 | 36 | 128 |
| 0560L        | 10    | 1000 | 230 | 1170 | 1040 | 1300 | 1940 | 620 | 1600 | 400 | 180 | 300 | 45 | 165 |

| Motor<br>AMZ | GD | H   | HD   | L    | LD   | LE  | X   | Y    |
|--------------|----|-----|------|------|------|-----|-----|------|
| 0500L        | 20 | 500 | 1530 | 2195 | 1915 | 540 | 746 | 1056 |
| 0560L        | 25 | 560 | 1675 | 2830 | 2395 | 655 | 836 | 1446 |

Above table gives the main dimensions in mm.

For detailed drawings please see our web site  
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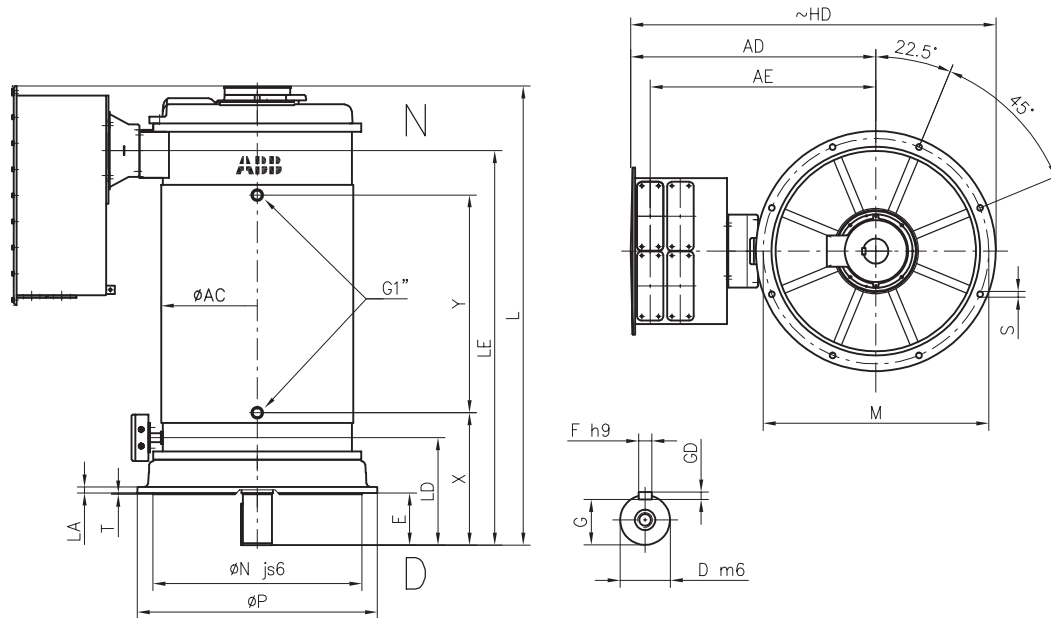
# Permanent magnet motors

# Sizes 500 to 560

Cooling designation: IC71W

Dimension drawings

Flange-mounted: IM V1 (IM 3011)



| Motor<br>AMZ | Poles | AC   | AD   | AE   | D   | E   | F  | G   | GD | HD   | L    | LA | LD  |
|--------------|-------|------|------|------|-----|-----|----|-----|----|------|------|----|-----|
| 0500L        | 10    | 1020 | 1175 | 1080 | 140 | 250 | 36 | 128 | 20 | 1750 | 2160 | 30 | 475 |
| 0560L        | 10    | 1150 | 1260 | 1170 | 180 | 300 | 45 | 165 | 25 | 1965 | 2800 | 60 | 605 |

| Motor<br>AMZ | LE   | M    | N    | P    | S  | T | X   | Y    |
|--------------|------|------|------|------|----|---|-----|------|
| 0500L        | 1830 | 1080 | 1000 | 1150 | 28 | 6 | 746 | 1056 |
| 0560L        | 2345 | 1320 | 1250 | 1400 | 28 | 6 | 718 | 1446 |

Above table gives the main dimensions in mm.

For detailed drawings please see our web site  
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# Permanent magnet motors inbrief, basic design

| Motor size              |                       | 280                                                                                  | 315               | 355               | 400               | 500                                                  | 560                                       |
|-------------------------|-----------------------|--------------------------------------------------------------------------------------|-------------------|-------------------|-------------------|------------------------------------------------------|-------------------------------------------|
| Stator                  | Material              | Cast iron EN-GJL-200/GG 20/GRS 200                                                   |                   |                   |                   |                                                      |                                           |
|                         | Paint colour shade    | Blue, Munsell 8B 4.5/3.25 / NCS 4822 B05G                                            |                   |                   |                   |                                                      |                                           |
|                         | Paint                 | Two-pack epoxy paint                                                                 |                   |                   |                   |                                                      |                                           |
|                         | Paint thickness       | ≥ 70 µm                                                                              |                   |                   |                   | ≥ 180 µm                                             |                                           |
| Bearing end shields     | Material              | Cast iron EN-GJL200/GG 20/GRS 200, EN-GJL 250/GG 25/GRS 250, EN-GJS-400/GG40/GRP 400 |                   |                   |                   | Cast iron EN-GJL200                                  |                                           |
|                         | Paint colour shade    | Blue, Munsell 8B 4.5/3.25 / NCS 4822 B05G                                            |                   |                   |                   |                                                      |                                           |
|                         | Paint thickness       | Two-pack epoxy paint, thickness ≥ 70 µm                                              |                   |                   |                   | ≥ 180 µm                                             |                                           |
| Bearings                | D-end                 | 6316/C3                                                                              | 6319/C3           | 6322/C3           | 6324/C3           | 6330/C3                                              | 6338/C3                                   |
|                         | N-end                 | 6316/C3<br>VL024                                                                     | 6316M/C3<br>VL024 | 6316M/C3<br>VL024 | 6319M/C3<br>VL024 | IM 1001:<br>6330/C3<br>IM 3011:<br>7330 BM           | IM1001:<br>6338/C3<br>IM 3011:<br>7338 BM |
| Axially-locked bearings | Inner bearing cover   | As standard, locked at D-end                                                         |                   |                   |                   | IM 1001: Locked at D-end<br>IM 3011: Locked at N-end |                                           |
| Bearing seals           |                       | V-ring or labyrinth seal as standard, see tables in chapter 'Bearing seals'          |                   |                   |                   | Labyrinth seal in both ends                          |                                           |
| Lubrication             |                       | Regreasable bearings, regreasing nipples, M10x1                                      |                   |                   |                   |                                                      |                                           |
| SPM-nipples             |                       | As standard                                                                          |                   |                   |                   |                                                      |                                           |
| Rating plate            | Material              | Stainless steel, EN 10088                                                            |                   |                   |                   |                                                      |                                           |
| Terminal box            | Frame material        | Cast iron EN-GJL250/GG 25/GRS 250                                                    |                   |                   |                   | Structural steel, S235JRG2- EN 10025, thickness 3 mm |                                           |
|                         | Cover material        | Cast iron EN-GJL250/GG 25/GRS 250                                                    |                   |                   |                   | Structural steel, S235JRG2- EN 10025, thickness 3 mm |                                           |
|                         | Cover screws material | Steel 8.8, zinc electroplated and yellow cromated                                    |                   |                   |                   | Steel 8.8, Delta-Tone 9000                           |                                           |
| Connections             |                       | Please see the chapters 'Terminal box'                                               |                   |                   |                   |                                                      |                                           |
| Fan                     | Material              | Glass fibre reinforced plastic or aluminum                                           |                   |                   |                   | Structural steel, S235JRG2- EN 10025                 |                                           |
| Fan cover               | Material              | Steel                                                                                |                   |                   |                   | Structural steel, S235JRG2- EN 10025, thickness 3 mm |                                           |
|                         | Paint colour shade    | Blue, Munsell 8B 4.5/3.25 / NCS 4822 B05G                                            |                   |                   |                   |                                                      |                                           |
|                         | Paint                 | Two-pack polyester powder paint                                                      |                   |                   |                   |                                                      |                                           |
|                         | Paint thickness       | ≥ 80 µm                                                                              |                   |                   |                   | ≥ 180 µm                                             |                                           |
| Stator winding          | Material              | Copper                                                                               |                   |                   |                   | Form wound copper                                    |                                           |
|                         | Insulation            | Insulation class F                                                                   |                   |                   |                   |                                                      |                                           |
|                         | Winding protection    | 3 Pt-100, 2-wire connection                                                          |                   |                   |                   | 6 Pt-100, 3-wire connection                          |                                           |
| Rotor winding           | Material              | Permanent magnet rotor                                                               |                   |                   |                   |                                                      |                                           |
| Balancing method        |                       | Half key balancing as standard                                                       |                   |                   |                   |                                                      |                                           |
| Key way                 |                       | Open key way                                                                         |                   |                   |                   |                                                      |                                           |
| Heating elements        | On request            | 50 W                                                                                 | 2x50 W            | 2x65 W            | 2x65 W            | 400 W                                                | 500 W                                     |
| Drain holes             |                       | Standard, open on delivery                                                           |                   |                   |                   |                                                      |                                           |
| Enclosure               |                       | IP 55, higher protection on request                                                  |                   |                   |                   |                                                      |                                           |
| Cooling method          |                       | IC 411, IC 416                                                                       |                   |                   |                   | IC 411, IC 416, IC 71W                               |                                           |

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[illegible]

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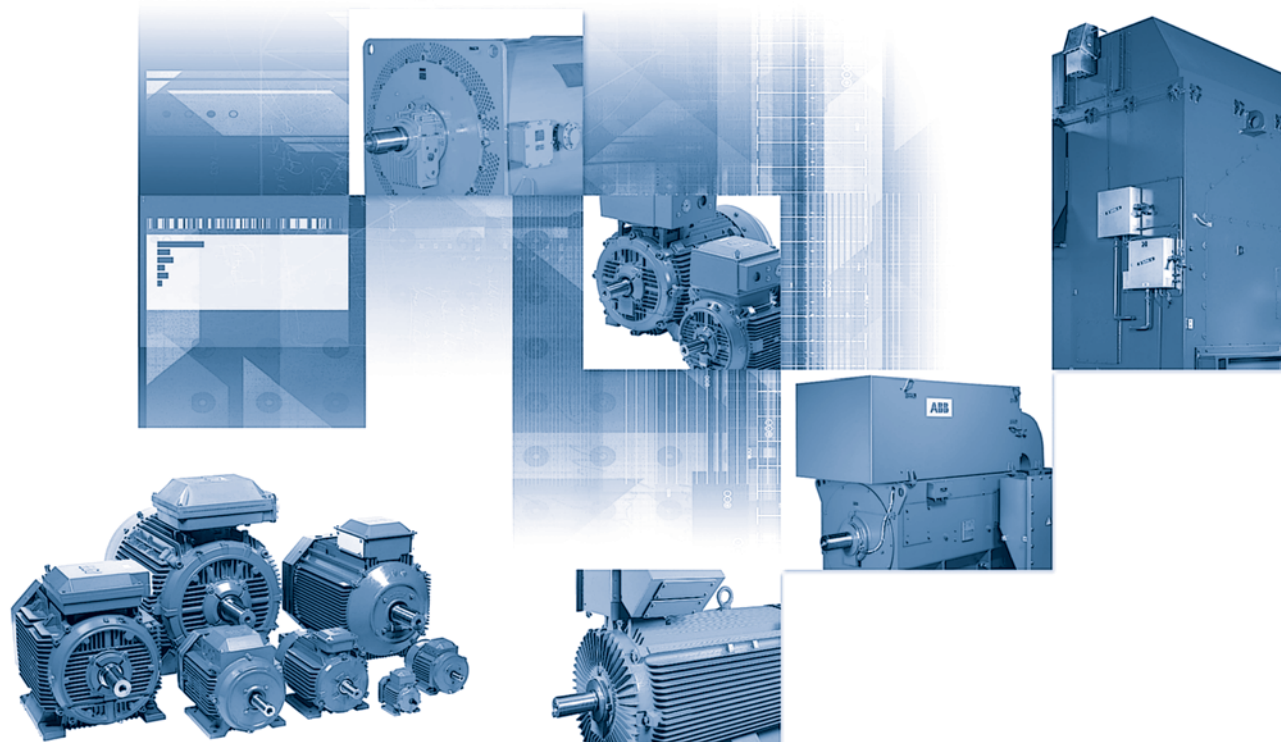
- Aluminum motors
- Cast iron motors

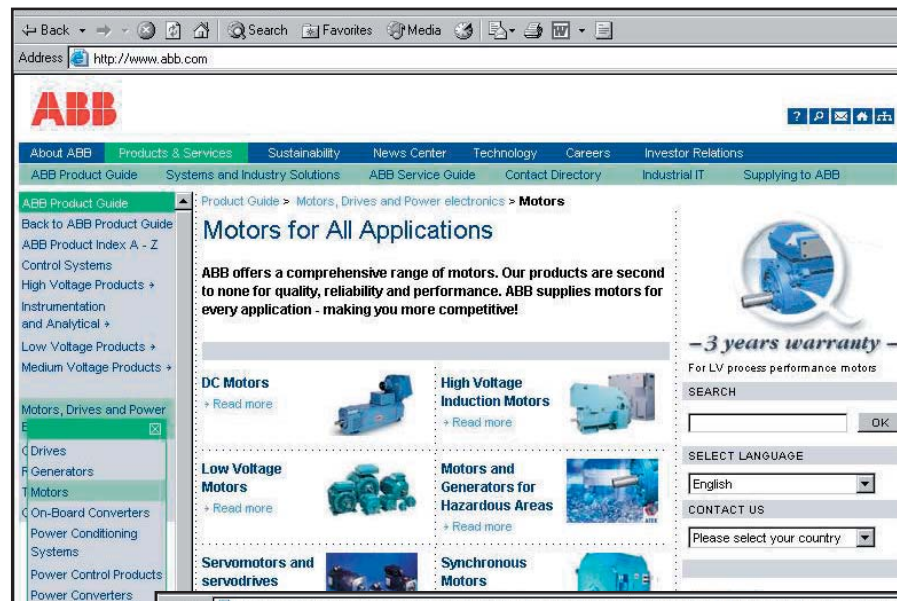
### Other applications

- Motors for hazardous areas
- Marine motors
- Permanent magnet motors
- High speed motors
- Wind turbine generators
- NEMA motors
- Water cooled motors
- Motors for roller table drives
- Slip ring motors
- Wood dryer motors
- Fan application motors

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- High voltage cast iron motors
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## Motors & Drives

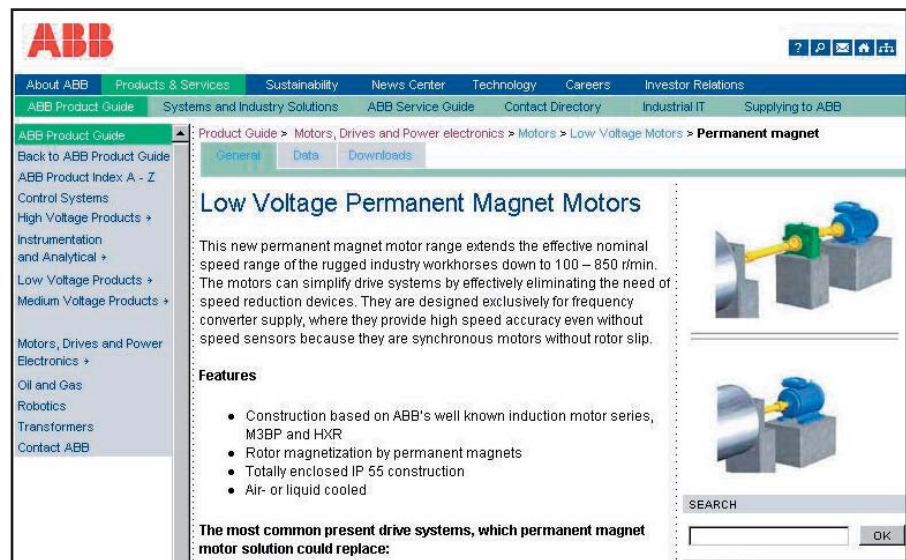
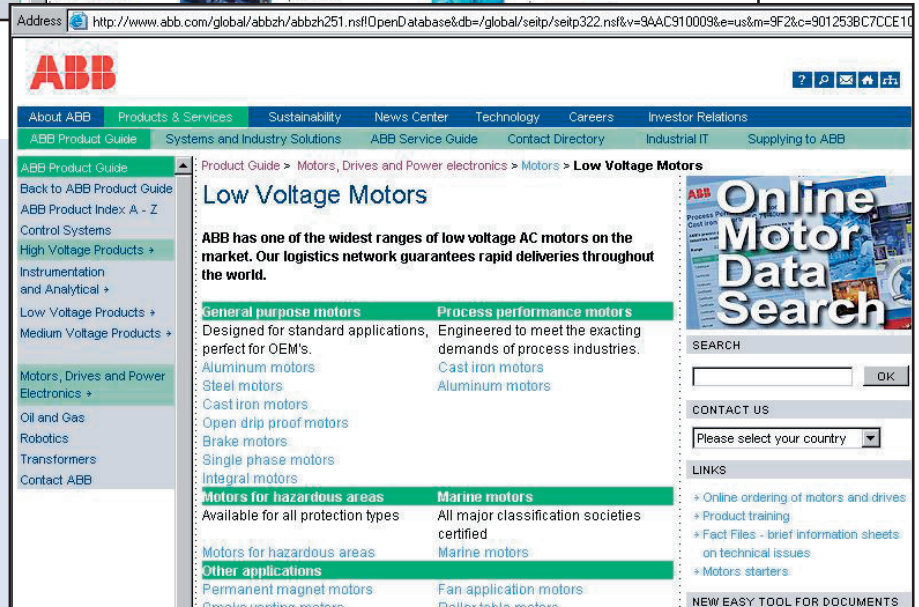
=> Motors

=> Low Voltage Motors

General purpose motors  
Process performance motors  
Motors for hazardous areas  
Marine motors  
Other applications

=> Permanent magnet motors

Smoke venting motors  
Water cooled motors  
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# Drive<sup>IT</sup> Low Voltage Motors

Manufacturing sites (\*) and some of the larger sales companies.

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